Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY TELEPHONY PUBLISHING CORPORATION,
608 S. Dearborn St., CHICAGO, Telephone Wabash 8604

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Entered as second-class matter September 4, 1908, at the postoffice at Chicago, Ill., under act of March 3, 1879.

Volume 102
Number 4

CHICAGO, SATURDAY, JANUARY 23, 1932

Subscription — 10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

THE "CIRCLE OF COOPERATION" IN THE TELEPHONE INDUSTRY

The need of closer cooperation among the various factors of life was never so apparent as it is in these days of difficult economic conditions. Every subscription to an unemployment relief fund, every plan to help the needy or to improve the situation, resolves itself into an agency of cooperation.

The belief that "no man liveth unto himself alone" has taken on a tremendous emphasis since the world has been groping through the dark corridors of depression. Organized relief committees are succeeding only to the extent that they are convincing people that all must unite to help their less fortunate fellows—that cooperative effort must prevail if society is to climb out of the valley and feel the sunlight again.

It all means more cooperation.

* * * *

Business leaders, in recent years, have been swinging to the belief that in a broad sense industry requires mutual cooperation if it is to make satisfactory progress. The highest conception of modern business is no longer to destroy others and reign alone, but for all to advance together.

The federal government, by protecting small business from the unfair aggressions of attempted monopoly, has encouraged the development of this idea.

* * * *

The telephone business offers a striking example of the value of cooperation. Two weeks ago in TELEPHONY'S columns appeared an announcement regarding the 1932 edition of its "Directory of the Telephone Industry," which referred to the 7,000-odd locally-owned telephone companies as "Independent" companies, the term by which they have been designated for many years.

The point was there made that the time-honored description, "Independent" might reasonably be amended to read "Inter-dependent," in view of the fact that every branch and phase of the telephone industry is tied up and interwoven with one another.

The operating companies depend upon the manufacturers for their equipment and on the Bell long lines for many toll connections. The manufacturers depend upon the operating companies for a market for their output, and the Bell organization depends on the local companies for the handling and completion of long distance messages.

In short, the telephone business is an inter-dependent industry, each factor performing its share of service, with this cooperation essential to the well-being of all the others, individually and collectively. The more this cooperation and mutual understanding are developed, and the better they function, the more satisfactory will be the telephone service furnished the public.

* * * *

One of TELEPHONY'S readers—a telephone man of long experience in all branches of the business, including engineering and manufacturing—has sent in a letter suggesting that this inter-dependence should also embrace the telephone ratepayers. In other words, that while the various branches of telephone work—operating, manufacturing, Bell and locally-owned companies—depend on one another, they likewise depend on the public, while the public also depends on them for its most essential communication service.

In his letter he says:

"It has been said that the greatest institution in the world is the home. Next we might say is *government*, meaning the organizations which put into action the social, religious and industrial activities of man.

Any of these divisions of organization when analyzed discloses some form of cooperation. None of the systems of human conduct recognizes individual power, whether applied to one person or a group of people. There must be cooperation to obtain results useful to civilization.

That which is contributing the most to amalgamating the efforts of the human race in thought and action is the telephone industry. It cannot be classified as part of the 'machine age,' because its product is not an article, but the expression of a spoken thought.

Our personal reflection can be projected at a distance without destroying the action of the individual. You can not tell as much about a person by looking at his picture as you can by listening to the spoken expression of his thought.

With the foregoing in mind, it is gratifying to read your announcement regarding the coming issue of TELEPHONY'S Directory, in which you recognize the difference between 'Independent' and 'Inter-dependent.'

It is about time that we all recognized the inter-dependency necessary to continue our responsibility as telephone people. This responsibility carries with it the application to our industry of the disclosures of science, and making available to the public this God-given wonder to advance the march of human progress.

Your reference to the inter-dependency of the so-called Independent operating company, Bell companies and manufacturers might well include the public.

They are all in the same boat, and collectively form a great industry. They must all work together if the telephone's service to the race is to be completely realized. That is to say, there must be real cooperation. Here's wishing success to the 'Inter-dependent telephone industry'!"

* * * *

There is no doubt that the lasting success of the telephone industry depends on the effective coordination of its different factors, and their working in harmony. The public, for whom these agencies work to supply service, should be a part of this "circle of cooperation," in order to realize the most satisfactory results.

It is the task of the component parts of the telephone business first to see that there is no break in their own segment of the circle, and then render a united service that will deserve the good will of the people generally throughout the country.

COMING CONVENTIONS.

Minnesota Telephone Association, Radisson Hotel, Minneapolis, January 26, 27 and 28.

Nebraska Telephone Association, Hotel Paxton, Omaha, February 9-11.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, February 24, 25 and 26.

Texas Independent Telephone Association, Texas Hotel, Fort Worth, March 22, 23 and 24.

South Dakota Telephone Association, Sioux Falls, April 6 and 7.

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, April 12, 13 and 14.

Kansas Telephone Association, Jayhawk Hotel, Topeka, April 19, 20 and 21.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 17 ,18 and 19.

Up-State Telephone Association of New York, Jamestown Hotel, Jamestown, May 25, 26 and 27.

The first move towards government ownership and operation of communications was taken in the Senate last week when a resolution offered by Senator Couzens was adopted, ordering the radio commission to make a survey of the broadcasting situation with a view to determining the feasibility of the government taking it over.

It was stated that there has been much complaint of the use of radio facilities for commercial advertising, and a number of the senators contend that the broadcasting systems should be more strictly regulated in their use of the air, while others advocate federal operation outright.

* * * *

Great importance is attached to this question at this time in view of the fact that a presidential campaign will be fought during 1932, and it is expected that the radio will be used by the political parties to a greater extent than ever. This very fact, however, will probably prevent an agreement as to government operation, as both parties would prefer private operation rather than have their political rivals controlling the broadcasts prior to the election.

Some Commercial Problems of Today

Discussion of Stimulated Business, Planned Interview of Business Subscribers and Employe Sales—The Training of Employes for Selling—Other Contacts With Public—Address at Annual Convention of Illinois Telephone Association

By E. R. Cogswell,

General Commercial Manager, State Area, Illinois Bell Telephone Co.

Perhaps never in our history has the commercial department carried such a load as today. The problems facing us, however, are all interesting; and if we succeed in finding their solution, we can at least feel assured in our own minds that a good job has been done.

I intend to touch upon only two or three of these problems, but these two or three, I am sure you will agree, are the more important ones. The bulk of the commercial job may be summed up in a few words—obtain business, retain it, and collect for it; and at the same time keep everybody satisfied and happy.

Around this simple summary is built all the ramifications of our business, and these ramifications reach into every portion of our social, business and cultural society.

The obtaining of new business is one problem that faces us all, and one in which we are all vitally interested. During the last few years we have passed from order-takers to salesmen; and today we are devoting a large portion of our time and thought to salesmanship. Our development has, I think, been rapid.

New business to be obtained naturally divides into three classes: Offered business, stimulated business, and employes' sales. The method of handling the offered business has changed materially from the method formerly employed. A few years ago people came to the office to buy service, and we took their orders. Today when the prospective subscriber comes in, instead of just taking an order we try to sell him the kind of comfortable and convenient service he should have. This often results in the sale of a better grade of service than called for, and also in the sale of extensions, wiring plans, etc.

In attempting to outline some of the problems in sales, I trust you will pardon a personal reference to my own company, as I shall speak from our own experience, and refer to methods which we employ.

The second class, stimulated business, has undergone a complete change. To use a stock phrase: "We plan our work, and then work our plan." Stimulated business is divided in such a way that all parts of our patronage and prospective patronage are covered.

We have the planned interviews with

			Annual Revenue	
Ten months, 1930.	Number.	Sales.	Per cent Sales.	Value Per Sale.
Interviews	45,372	7,114	15.7	$53.00
Follow-ups	3,299	1,352	41.0	94.00
Ten months, 1931.				
Interviews	44,816	9,674	21.5	61.00
Follow-ups	3,220	981	30.5	86.00

Business Interviews in 1931 Compared to Results in Corresponding Periods in 1930.

large and small P. B. X. users, planned interviews with our business subscribers, planned interviews with toll users, and the planned interviews with residence subscribers for the sale of extensions, and also for the "Friends" booklet—the latter to stimulate residence toll service.

In addition, there are the follow-ups from party-line interference, excessive busy reports, slow answers, no such person listed, and all the other items which make up the list from which a sales prospect may be secured. Then there is the vacant premise and non-user prospect.

All of these things now fit into our normal day in such a way that we have many opportunities to sell. While I am on this subject, let me say that one of the most profitable methods we have developed is the planned interview with business subscribers.

It is our idea that each business subscriber in the territory should be called upon at least once each year. The first year we tried it we had excellent results not only in the sale of service but from the standpoint of public relations. Our subscribers appeared to be really glad to see us, and to know that we were interested in the kind of service they received, instead of only in the collection of the bill.

That we made many friends was evidenced from the reception tendered us when we made the second call. From the revenue standpoint, the results were excellent, as you will see from the data in the accompanying table.

All of this phase of the work is interesting. Those employes engaged in the planned interview work are enthusiastic about it, because it gives them a chance to exercise their brain and imagination by studying the subscriber's telephone problem, diagnosing the case, and suggesting the solution.

The subscribers, on the other hand, are, as a rule, very appreciative, and why should they not be? If you decide to build a house or undertake some other activity which is out of our own field, what do you do? Why, you call in a specialist and pay for his advice. Under the plan we are using we have specialists at the subscriber's command at all times, and without cost. It not only makes for better telephone service and revenue, but for satisfied subscribers.

During all of our sales interviews we attempt to find out the customer's attitude toward our business as a whole. In obtaining this picture, we do not ask direct questions, but leave the way open for the customer to criticize our billing, rates, practices, treatment, and any other part of our business.

Interesting and useful information as to what our customers think of us is thus obtained as a by-product. It is generally conceded that if we expect to improve a patron's attitude, we must first find out what practices he may criticize, and the study which we carry on is for the purpose of bringing this out.

One of the principal things the salesman is trained to observe is whether or not the customer is interested in seeing him and discussing telephone matters. Of about 36,000 interviews summarized recently, about 77 per cent of the customers showed a positive interest, and 15 per cent more were classed as neutral. Only about 8 per cent seemed to be disinterested in discussing their service or equipment. Aside from the sales made, therefore, it is evident that a great majority of our customers appreciate our interest in their telephone service, and good will is promoted.

"The Bulk of the Commercial Job," Says Mr. Cogswell, "May Be Summed Up in a Few Words—Obtain Business, Retain It and Collect for It and at the Same Time Keep Everybody Satisfied and Happy."

The third item, employes' sales, is one in which we are all particularly interested. Employes of a telephone company reach into almost every branch of society, and the possibilities for sales suggestions are very great. Generally this plan is operated in two ways: One, prospect slips, and the other, direct sales.

In the first instance the employes suggest prospects, and the canvassing is done by the commercial department. These prospects come from interviews they may have had with friends, suggestions which may have been given them, casual conversations, and general observation. Again a personal reference will give you a picture of what can be done. The results in my own case are very interesting, for in general 16,251 prospects resulted in 7,433 sales, or an average of 46 per cent.

Direct sales are those in which the employe definitely closes the contract and sends in an order. These come mostly from the plant department, particularly the installer, who is instrumental in selling an order for an extension when installing the main instrument. This is a very desirable way to sell, and in my area has resulted in the sale of 19,926 items, including 12,530 stations during the first ten months of this year (1931).

Now, all of this activity has resulted this year in increased sales of approximately 30 per cent over 1930. While owing to the general condition, it has not been permitted us to keep ahead of the game, it has materially cut down the losses, and above all has helped to establish better relations with our public. In our own case I cannot say too much about the effort which has been put forth by our employes.

There is one point, however, which we should not overlook. Probably no organization has the same opportunity that we have to sell. I mean by this that no organization has the entrée to business houses that is accorded to us. Our representatives, as a rule, can approach the executive of any business, or the president of a bank, and is admitted almost without question. Why? Because the executive generally feels that the representative would not be there unless he had something special to talk about which was of interest to that particular business.

This is a very valuable asset, and one which should be carefully guarded. Our representatives should not make these calls until and unless they are thoroughly acquainted with the subject, and are in a position to discuss the telephone problem thoroughly from the subscriber's angle. This privilege is built up after years of contact and through a belief in our desire to help. To abuse this privilege would be a very grave error.

All this naturally brings up the question of preparing the representative to do the right kind of a job, and, therefore, we pass to another problem of the commercial department—training. Training can be justified upon only one basis—its contribution to the attainment of high standards of performance and production. These standards apply both from the customer's service and the administrative viewpoint. They presume certain personal qualifications, and a recognition of definite responsibilities.

Under our present plan we program all phases of the work, and then carefully direct our efforts toward the accomplishment of the particular objective set up in the program. We measure our progress month by month, or day by day. We watch closely the results data as an indication of the performance. Training by its very definition can have but one principal objective—improved performance.

If training is given its proper place and consideration, improved performance must result in an approach to the attainment of our objectives. With proper systematic training, this improved performance should be self-perpetuating, and reflected in our efforts toward any and all objectives. Improved performance is reflected in greater efficiency, greater production, higher employe qualifications, higher morale, easier supervision, and more economical production. All of these things make for the betterment of service, both to our subscribers and to the company.

It takes from 12 to 16 years of education and training before a teacher, a preacher, or a lawyer may practice; two to four years before a plumber, bricklayer, or machinist may work at his trade; and we should hardly expect to take a girl or boy, a man or woman, out of school or from the street, set them at a desk with a statement as to what the job is, occasionally check them up or tell them again and again something they may have forgotten, and expect satisfactory results.

It is quite generally agreed among those who have given the subject careful study that a considerable amount of money can be spent advantageously in systematic and well organized training. It is also easily susceptible of proof that without the training, a heavy penalty in time lost will be paid, not only by the department primarily involved, but by all departments affected by the unit of effort.

Training is the direct responsibility of management, and not incidental to the job. Obviously any organization apart from the immediate management and not directly supported, cannot logically do the actual training. Management responsibility and duties, however, are so numerous and demand so much of their time and effort that it has proved desirable to set up a staff organization to assist supervisors in developing plans which are based on a careful study of policies and methods that have been adopted by management.

The training is done individually through classes and what we term "on the job" training. Training lessons are developed and the material given to employes in regular courses. Classes of one-half hour to two hours' duration are held in most of the larger offices two or three times a week. In the larger offices service observations are taken, and these observations used as object lessons in the discussion with the employes during these weekly classes.

The results which have been attained fully demonstrate that the training is well worth while. It develops a sense of responsibility among the employes which gives them a greater confidence in themselves, and permits them to carry on a contact with the subscriber with very much more satisfactory results.

In handling our commercial job, however, training the employe is not all that is necessary. The commercial department is a most interesting one, in that at all times we have the human element with which to deal. It is not enough that we write routines and follow them, for as most of you know, sometimes our greatest embarrassment comes from the act of an employe who has dogmatically followed the routine, but failed to apply it properly. He has done the routine thing, but he has done it in a routine way and overlooked the human or sympathetic side.

We cannot measure our job on the technical showing alone. Success in the commercial department depends, to a large extent, upon our ability to recognize and appreciate the personality of our public. And speaking of our public, let us not live in a false atmosphere in our relation to them.

This public of ours is composed of human beings, made in the same form as ourselves, who live, move and have their

Some of the Things the Telephone Does as Presented in The Transmitter, the Monthly Magazine of the Employes of the Chesapeake & Potomac Telephone Co. The Slogan at Top and Bottom Is Used on All the Company's Advertising.

being as we do. Their feelings are as sensitive as ours. In fact, our public is made up of counterparts of ourselves, and is composed of our friends, acquaintances, neighbors and relations.

Every business has its own public. We must remember always that to every other line of endeavor we ourselves are part of their public. With this as a base, what kind of relations do we wish to have with them? Surely the answer is self-evident. We should treat them as we should wish to be treated. Fundamentally, good public relations must rest upon the same sort of understanding which prevails between good friends.

We in the telephone business are in a peculiar position. We are the only organization in the community from which the public can obtain telephone service. Under these circumstances, it is even more important that we should try to please.

If you go to the grocery store, and you do not like the goods or the treatment you receive, you can go to some other grocery store, but not so with telephone service. You have to buy—you are forced to buy from the one organization in the town, or not at all.

In the first instance you may not like the treatment you receive, but you get over it because so long as you can obtain your article somewhere else, you don't spend time nursing a grievance. But with the telephone company it is different. If the treatment you receive is discourteous, it will be recalled to your mind every time you come to the office or use the service, and you will watch for an opportunity to retaliate.

Naturally we cannot always meet the demands of the subscriber, or supply him with the particular thing he may request. Such cases make our problem all the more difficult, and no routine can be developed to meet the situation. This is one place where sympathy and an understanding of human nature comes in, for if we do a good job, the subscriber will have a clear understanding of the situation. He will not leave the office feeling that the telephone company is either arbitrary or not interested.

The commercial department is the official representative of the telephone company and, therefore, acts as a liaison officer between the company and the public. It is the function of the commercial department to act as an interpreter to the public of our routines, practices, and policies and, on the other hand, to interpret to our own organization all of the desires and the attitude of the public.

In general, we should endeavor to see that every subscriber with whom we come in contact is treated in such a manner that when the contact is completed the subscriber will depart with a feeling of friendliness, and a belief in the sincerity of the aims and policies of the company.

To operate as we do the only business of

its kind in the community, imposes a burden on us to operate in such a way that no one will ever have a complaint. That is a large order, I admit. It is the very highest standard that can be set. It is "hitching your wagon to a star." Yet, if there is any pleasure in striving, why not try to secure the most pleasure by having something real to work for?

The subscribers cannot compare our prices or service with any other prices or service in the town; but they can very definitely compare the treatment they receive from us with the treatment they receive from others. If the comparison is favorable to us, I think we can be reasonably sure that the subscriber's attitude will be favorable.

We all expect that the business we are operating will still be operating a hundred years from today, and we should strive to bring about a mutual understanding that will finally eliminate all suspicion and attack.

Rochester (N. Y.) Professor Uses Telephone in English Class.

Outlining an English course for high school students, Professor J. M. Spinning, acting principal of the West High School, Rochester, N. Y., recently recommended the use of dummy telephones for classroom practice as a means of improving the students' oral composition.

"Since the telephone is the instrument of one of the most natural forms of oral composition," he explained, "it can be used to give a lesson in effective speech with a premium on courtesy—which will include careful enunciation and brevity."

Among the points which should be brought out in such a course, Professor Spinning set forth the following:

"In calling, do not ask: 'Is Mrs. Perkins there?' Her thereness may not apply to you. She may be too busy to talk with you. Besides, having learned that she is 'there,' you still have to ask to speak with her. Make one request take the place of two. Say, 'May I speak with Mrs. Perkins?'

"Also, unless you have returned unexpectedly from Africa, do not ask your friends to guess your identity. The telephone is no longer a toy. It is an instrument for public convenience."

Some of the Uses which make a Telephone Valuable

1. In getting a Doctor in case of sickness.
2. In getting help quickly in case of fire or robbery.
3. In getting help in case of accident.
4. In getting in touch with a Veterinarian in case of sickness among the live stock.
5. When someone wants you quickly.
6. When someone has important information they wish to get to you at once.
7. In getting the local market and selling Hogs, Cattle, Sheep, Poultry, Eggs, Vegetables, Milk and Cheese.
8. If someone wants work done they call the person who has a telephone. They no longer get the person they must make a trip to see.
9. The feeling of security in having always at hand a quick messenger.
10. The general exchange of important news.
11. The social value to old and young. Most invitations to social affairs are now given and received over the telephone.
12. In making quick contacts with relatives and friends.
13. Telephoning home when one is going to be late to a meal, or finds an early meal necessary.
14. In finding out whether anyone is at home or not before making a trip, or in making appointments.
15. In telephoning to the store.
16. Someone is in town and you wish them to bring home an additional article. This often saves a trip.

The modern person believes in the telephone because it is a time saving convenience and for this reason he knows it saves him money. Every trip with an automobile which is saved by using a telephone saves from 3 to 6c a mile besides his time—a trip to any town means an expense of from 50c to $2.00.

Card Which a Wisconsin Company Is Distributing Among Its Rural Subscribers. Original Card Is 5½ by 8¾ Inches.

What Operators Want to Know

Proper Ventilation of Operators' Quarters Is of Vital Importance—Open Windows During Standing Relief—Comfort and Well Being of Operators Is Chief Operator's Responsibility

By Mrs. Mayme Workman,
Traffic Supervisor, Illinois Telephone Association, Springfield, Ill.

The question of the proper ventilation of operators' quarters has not been asked in this week's series of questions and answers, but, as proper ventilation of the operators' quarters is of such vital importance, especially during the winter months, it will not be amiss to say something on this subject at this time.

Proper ventilation of the operating room has a direct bearing on the health and comfort of the operating employes. Colds and minor throat troubles occur most frequently during the winter months. I believe I am safe in stating that the condition of the air in the operating room and operators' quarters is an important predisposing factor in these troubles, and that the number of such cases will be kept at a minimum only if temperature, humidity and ventilation are kept as nearly right as possible.

If the employes, going to and from work, are subjected to an alternation of the cold, moist air outdoors, and hot, dry air indoors, there is apt to be an injurious physical effect. During an operator's working hours she breathes the indoor air. If it is too hot and dry, contrasting too sharply with the outdoor air, it has a deleterious effect on the delicate mucous membrane of the throat and nasal passages, parching it and causing congestion.

The catarrhal secretion which results, acts in turn as a culture medium for bacteria that may be present in those parts. Under such conditions the various bacteria grow rapidly and thus make infection possible.

Exposure again, after leaving work, to the cold outdoor temperature, causes a withdrawal of blood from the congested areas. The consequent diminution in the number of white blood corpuscles, which normally combat bacteria, allows the infection to gain a stronger foothold—and the "cold" is well under way.

Once a catarrhal tendency is established, the tendency to colds increases. Systematic attention to ventilation of the operators' quarters is, therefore, a health precaution of much value.

The chief operator, as head of the office, is, of course, responsible in all matters connected with the comfort and well-being of the operators; and it is an essential part of her duties to see that the ventilation of the operators' quarters is properly looked after.

A thermometer should be provided and placed where it can be easily read. The temperature should be maintained at 68 or 70 degrees, not exceeding the latter, during the season when the rooms are heated. During damp weather it may be necessary to keep the operating room at a slightly higher temperature to prevent the moisture from causing apparatus trouble.

In offices where operators have standing reliefs, windows should be opened wide during these periods in order to change the air of the room. The main thing is to thoroughly ventilate the room with the least discomfort to all.

Protect the health of your employes by keeping their quarters properly ventilated and the temperature at a degree conducive to their health and comfort.

Questions from Illinois Operators.

1. If the long distance operator does not give the destination calling to the operator and the circuit is cleared after a "DA" report, when the subscriber answers and asks who was calling, how is it possibel to trace the call?

2. If we get a report of "room telephone da," do we give this report to our subscriber and does it change the class of call?

3. How long is a tributary office permitted to hold a toll line to another tributary office when the circuits are busy and waiting for the line?

4. What does CLR stand for?

5. What action should be taken when the party refuses to talk louder and you cannot understand the number?

For answers to these questions from real Illinois operaors, turn to page 29.

Telephones in Big Government Building

New Department of Commerce Building in Washington, D. C., With Seven Miles of Corridors Well Supplied With Telephone Service Over Its 25 Acres of Floor Space—Telephone Expansion With Development of the Department

The new Department of Commerce building with its 1,100,000 square feet of usable floor space is now occupied by the 10,500 employes of the department whose duties require them in Washington, D. C. Fronting on Fourteenth street, between Constitution avenue and E street, N. W., this structure is said to cover more ground area than any office building in the world.

© Underwood & Underwood Studios.

View of Beautiful New Department of Commerce Building Recently Erected in Washington, D. C.

This immense building with its 25 acres of floor space could not be possible without telephone service. Could one imagine a department chief on the first floor in the south end of this seven-story building wanting to communicate with the head of another section on the seventh floor in the north end of the building in person or by messenger and expecting to get an answer in a reasonable length of time? It would be a long journey, for there are seven miles of corridors.

Secretary of Commerce Robert P. Lamont, the assistant secretaries, department heads and their subordinate forces are served by a P. B. X. manual and dial-operated switchboard and 1,600 telephones. These telephones are equivalent to one instrument for about every six employes. The switchboard is connected with city central offices of the Chesapeake & Potomac Telephone Co. by 80 trunk lines. Other government departments are connected by 40 tie lines.

The switchboard equipment in this building has an ultimate capacity of 2,500 telephones and 240 trunk and tie lines. All telephones are connected by cable and wiring in riser shafts and under-floor conduits. The facilities are flexible so that additional telephone installations may be made or changes effected as required.

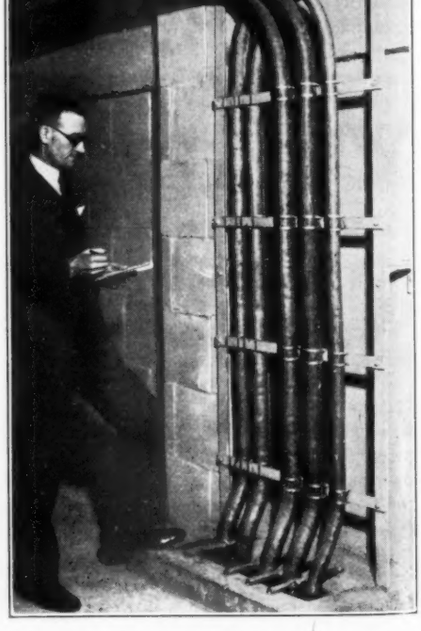
Since the Department of Commerce, formerly known as the Commerce and Labor Department, was established March 16, 1903, telephones serving the secretary and personnel of the department have increased 133 times. In the same length of time the number of employes has increased eight times.

Washington is now served by about 179,000 telephones. When this department was first established about 28 years ago, there were only 8,051 telephones in Washington. The Department of Commerce was served then by a single-position switchboard with 12 telephones serving the several departments in the building and with two trunk lines to the main central office.

The telephone number, then, as now, was 5060. The only change that has been made in the nearly 30 years that the department has been in existence has been in substituting the prefix "National" for "Main."

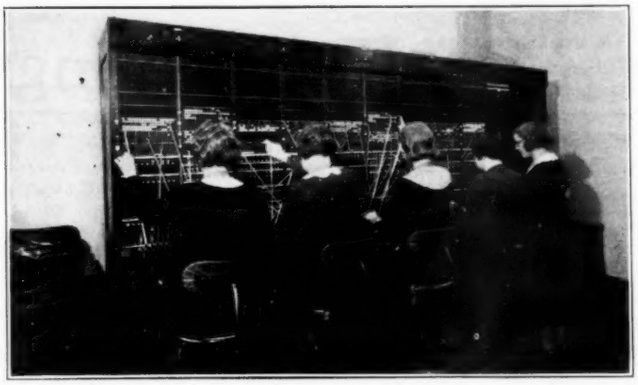
Early in 1905, the telephone facilities were increased from the original 12 telephones and two trunks to 26 telephones and eight trunks, according to Edward W. Libbey, now chief clerk and superintendent of the Department of Commerce, who was one of the

J. McIntosh, Telephone Installer, Testing Circuit in House Terminals Box in New Department of Commerce Building.



R. Gallagher, Plant Superintendent, Government Service, Inspecting Riser Cables in New Department of Commerce Building in Washington, D. C.

first telephone operators. Other operators were William J. Lee, now deceased; Charles D. Evans, now connected with the Department of Labor, and John H. Anderson, field service representative of the Indian Bureau, Department of Interior.



New Department of Commerce Telephone Switchboard Just Placed in Service. Operators, Left to Right, Are: Miss S. L. Simpson, Miss Georgebelle Loops, Mrs. Pauline Thompson, Mrs. Isabelle Burton, and Miss Edith M. Sherwood, Supervisor.

These four men operated the telephone and telegraph equipment, the communication systems being operated as one at that time. In addition to the telephones in the building occupied by the department, there were outside lines connecting the Steamboat Inspection Service, Bureau of Navigation, Coast and Geodetic Survey, Bureau of Standards, Carp Ponds on the Monument Grounds, and the Bureau of Fisheries.

Tie lines connected the switchboard with the White House, the Treasury Department, Bureau of Census, Department of Labor, Department of Statistics and the Bureau of Lighthouses.

The telephone and telegraph communication department was separated about 1910. In the meantime the Department of Commerce changed its headquarters to the Willard building. Telephone service at that time consisted of a two-position switchboard with 100 telephones and six trunk lines to city central offices and eight tie lines to other government departments.

These quarters were occupied until 1913, when the building just left by the department was constructed. This building contained 182,000 square feet of floor space and was served by a four-position switchboard and 600 telephones.

Telephone users served by the Department of Commerce switchboard today make more than 500 calls each hour and in excess of 10,000 daily, which is 20 times as many as were made during the average day in 1905, according to Miss Anna M. Hook, chief operator, who was the second young woman employed on the telephone switchboard in the Department of Commerce. She was preceded as operator by Miss Dyoll Prather.

In addition to Miss Hook, four operators serve the switchboard during the busy hours of the day. These operators must know "who's who" in the various departments and divisions, for while the officials and employes of the department are expected to call by number, it is only natural that a great many calls are made by name, which necessitates alert operators.

In assigning telephone numbers to the new telephone system, the various bureaus, insofar as possible, have been grouped in 100 or 200 blocks of numbers. For example, the telephones connected with this exchange from 300 to 399 serve the Bureau of Mines; from 400 to 499, Bureau of Fisheries, Navigation and Steamboat Inspection; the 500 block takes care of the administrative offices; 600, aeronautics, airways and lighthouses; and 700, coast and geodetic survey.

The foreign and domestic bureaus is listed 2,100, 2,200 and 2,300; the Patent Office 2,400 and 2,500, and the Bureau of Census, 2,600 and 2,700.

The first annual report of the department, dated December 1, 1903, showed a personnel of 10,125 employes, of which 1,289 were on duty in Washington and 8,836 in the country at large. There are now 18 commodity divisions and 13 technical divisions. Together with the divisions located in other buildings, the personnel of the Department of Commerce is now 10,488 in the District of Columbia with an additional 13,192 in the field.

Prognostications in Depressions Shown Falsely Exaggerated.

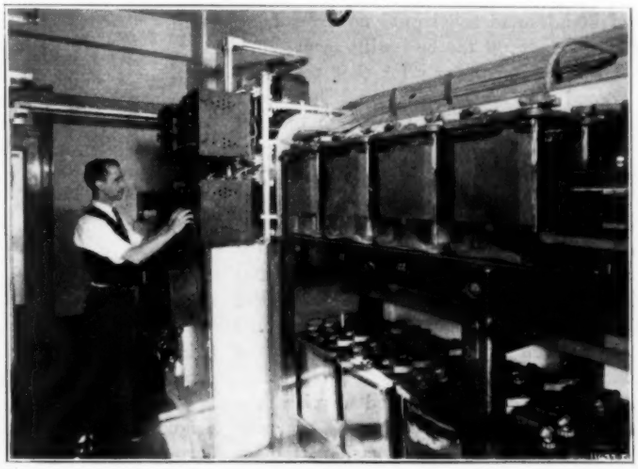
Encouraging signs for the future in business were stressed by President C. F. Sise of the Bell Telephone Co. of Canada in addressing officials and employes of the company who gathered in the Beaver Hall building headquarters at Montreal the day before Christmas for their annual program of carol singing.

According to Mr. Sise, a little historical perspective at this time of confusion in business and industry would show that a great deal rests upon the tendency of human nature to exaggerate the things that loom above the ordinary routine of life.

Lord Macaulay was quoted in connection with his history of similar times of depression that had occurred during the previous century. The Duke of Wellington, shortly before his death, had given thanks that he would not live to see the economic ruin of the world which seemed to be impending at that time.

Adelaide, the queen consort of William the Fourth, said that she hoped when the universal upheaval broke out she would be able to ascend the scaffold with the same fortitude as Marie Antoinette.

Mr. Sise asked for a pause in which to contemplate these prophesies before committing oneself to prognostications about the immediate future. Already there were bright signs on the horizon of business and finance although recovery will be slow.



R. Ledger, Dial Switch Frameman, Testing Equipment in the New Department of Commerce Building—H. F. Neimeyer Turns on Current of Power Plant Which Operates Dial System.

Outside Plant Men Talk Things Over

"I Wonder Why" of an Observing, Traveling Telephone Engineer.

By Ray Blain.

I wonder why linemen of the present day are not as proud of their pliers as were the wire-tanglers of yesterday?

The old timer would sell most of his clothes and all of his tools except his pliers when he got ready to blow, but they were his most valued possession and to part with them meant real disaster. Many of these old boomers would even carry their pliers in the hip pocket of their Sunday clothes, and some had good reason for so doing. They were excellent to help settle an argument, while if left lying around the storeroom or room in the hotel they had a habit of walking off.

The other day I noticed a gang of youngsters working and only a few of them were using pliers really intended for good line work. They must have been purchased in the dime store and were of the type we in the old days would have referred to as "Hog ringers."

They mashed wire instead of cutting it, and a mashed wire cannot be inserted in a splicing sleeve without a fight. These cheap pliers would not fit the hand of a gorilla, let alone the hand of man. They were big

New Type Pliers Showing Milled Surface Inside Handles Near Joint for Mashing Insulation on Wires.

and bunglesome and would not even hang in the keeper on the belt with security.

I do not intend to infer that there are no good pliers made any more, because I am of the opinion that better tools are available to the lineman today than ever before. Many will say that pliers are not as good as they used to be; but I think that is purely imagination, for I have always found pliers of reliable manufacture to be first class in every respect. Added to that they are today better-shaped, balanced, and designed with a view of comfort to the user as well as good service and with a long life.

One feature recently added to pliers is a milled surface inside the handles up near the joint, to be used for mashing the insulation on wire. This is, I believe, a feature really worth while, for it has always been the practice for linemen to mash wire in their plier handles and certain sizes have a tendency to slip down the smooth slope of the handles of the regular plier without mashing.

The addition of the milled surface eliminates this fault, and the insulation of even weatherproof wire can be mashed with comparative ease.

Yes, good pliers are good and getting better, and good linemen should be equipped with them if they are to do good work.

"Let's Splice Safety First Into Our Every-Day Work."

By Jake the Lineman.

Mornin' buddies! Dawg'gone but the days sure do roll aroun' fast, an' every day that rolls aroun' without an accident brings us one day closer to a "No Accident" year for 1932.

Won't it be a grand and glorious feelin' next December, when we give ole man "1932" a final goodbye kick, to know that we've completed a year without an accident?

Well, buddy, if you'll jist remember that you live each day only once an' then it's gone forever, you'll surely want to live each day right—an' you can't live it right unless you do your work "Safely."

A lot of accidents happen 'cause a feller lets his mind wander off on other things besides his work. Family trouble, financial trouble, and worry about the future often causes a feller to fergit what he's doin'. If you ever git to worryin,' I hope you'll jist remember this little poem which is jist gonna fall off my pen.

Don't worry, buddy, jist play fair,
Get squared away an' buckle in,
If the breaks go 'gainst you then
Jist smile an' take it on the chin.
Then when you've reached the top,
You kin look aroun' an' say,
"It was pretty tough goin' at times,
But I got over all the rocks in the way,
I didn't lay down and give up the fight,
No, sir! I jist kept on a pluggin' an' a hopin'
An' perty soon things jist come out all right!"

The next time yer lip curls down, an' yer sore at everybody, jist remember what ole "Jake" told you once an' see if it don't help.

With the new year jist startin', like as not yer company'll be doin' a lot of cable maintenance work. You'll be replacin' old rings, closin' old openings, an' gettin' the cable plant in fust rate shape.

So this week we're gonna practice a few signals to observe whenever we're workin' aroun' cable. Every buddy ready? O. K.! Let's go!

Solder pots don't belong on the cable platform. Get a pot hook an' hang it on the strand.

Temptation often ruins many a man, but if you let the devil tempt you to take a smoke while yer workin' in a manhole, yer may be ruined fer good.

Always see that the dipper is taken out of the paraffin pot before you let it down or pull it up

You don't have to use anything that isn't safe ter use. Make sure yer platform and ropes are in fust rate shape. Remember, a spill means a doctor bill!

Would you start ridin' a piece of strand if yer knew that yer weight would cause the strand to sag enuf ter make contact with some "hot" stuff? No! Well, always make sure yer in the clear an' you'll live longer.

Helpers er the guy who stays down should see that no one stands under you while yer workin'! Also, he should see that he's always in the clear.

Only careless fellers start ridin' a piece of strand they haven't inspected, and generally they end up takin' the last ride granted us humans. 'Nuff said!

Like as not yer may some day see a feller who's been burnt by hot solder, an' yer ought ter know what ter do.

(1) Cover the entire burned part with carbolated petrolatum.
(2) Apply a compress which covers the burned part.
(3) Wrap a firm bandage aroun' the compress to hold it in place.
(4) Solder burns are generally third degree burns an' patient should see a doctor at once.
(5) Don't open any blister produced by the burn, or don't apply cotton or iodine to the burn.

Everything is made fer a certain use. A cable chair is made to ride strand on. Don't use anything else, fer if if you don't use a cable chair yer apt to sit in a wheel chair the rest of yer days.

I read not so long ago about:

A cable reel that was placed on slantin' ground without the proper blockin'! The reel fell over and caught a little boy's leg as it fell, causin' a compound fracture.

A four-year-old girl fell into a kettle of hot paraffin burnin' her hips severely. Employes were not on guard at the time.

A woman fell over a pole which had been left layin' in the alley without warnin' signs. The fall caused injuries to the left knee and right arm.

An eleven-year-old girl tried to jump a steel line which was bein' used to pull cable. No one was near the line at the time.

Four people were caused hours of sufferin' jist 'cause "Safety" was forgotten. Worse than that, it was the public who suffered, not the careless employes. So, buddy, guard the public by placin' warn-

ings, an' if necessary a man at all places of danger.

Well, I gotta be ramblin' along, but I'll see yer next Saturday, an' I'm gonna have a lot of interestin' signals fer yer to study.

Got a mighty nice letter from Paris, Texas, the other day, an' it made me feel perty good! Drop me a line any time, fer I'm always glad to hear from you.

So long! See you next Saturday.

Narrow Escape on Aerial Cable When Messenger Broke.

By AN OLD CABLE SPLICER.

I believe the nearest I ever came to leaving this world occurred while on an aerial cable. It was common practice in certain exchanges in our territory to use joint-pole lines with the telephone cables above the light wires. The poles used in many cases were 40 to 50 feet in height, for it is only in recent years that wire companies have abandoned the high-pole habit.

On the day I received my big scare I was sent over to a neighboring exchange to clear some trouble on an aerial cable. I put my tone on a cross and finally chased the trouble down to a section between two poles. Then I mounted a cable car and started to ride the span. I rode out about the center listening all the while with my exploring coil.

Suddenly I heard a "ping" and saw one of the strands of the messenger fly out and then slowly writhe like an injured snake. I was paralyzed with fear and must have sat still for about 30 seconds, which seemed as many minutes. Finally I decided that I must try to get back to the pole from whence I came. I started to move slowly and carefully, almost holding my breath.

I had not traveled over five feet when "ping" again, and another strand twisted out even farther than the first.

Then and there I decided my days of toil were over and wondered what my wife would do with the insurance. I sat still for about a minute expecting to fall and wondering why I did not. I looked down and it seemed such a long distance. There was a bunch of electric wires of doubtful voltage between me and the ground. I wondered whether I would be electrocuted by the wires or would I miss them and be killed when I hit the ground. I derived no comfort from either thought.

I then decided that if the strand was not going to break with me sitting still, I might just as well have it over with, so I started for the pole at full speed. I must have traveled about 15 feet this time when another strand broke with a much louder report than the others. I stopped suddenly in spite of my resolution to reach the pole or fall in the attempt.

As three of the seven strands had broken there were still four holding. I began to wonder why they did not make a messenger with 11 instead of only seven strands. I decided there was nothing to gain by trying to hurry to the pole, so started again slowly. This was really necessary as I had reached the point where it was decidedly uphill to the pole and I was weak from fear. Some people claim that when they become scared they are stronger, but strength just does no good when you are on a breaking messenger.

I had gone about ten feet when I heard another strand go. I did not have the nerve to even look at it but broke out in a cold sweat and kept going. Now I had only three strands holding, but figured that as I neared the pole less of my weight was on the weak place in the messenger and I took small comfort in that fact.

The nearer I came to the pole the better it looked. When I finally reached it I hugged it with both arms tighter than does a climbing "grunt" on a pole when both hooks break out. I believe I know something of how Christopher Columbus felt when he reached America. I was so weak that I did not feel able to climb down the pole for several moments but just sat there and enjoyed being alive. After setting both feet on the ground I felt even better.

I called the office and the heavy gang came out and replaced a section of the messenger. When the old messenger was taken down it was found that the point where the four strands broke had received a bad burn by coming in contact with a "hot" wire at some time. Such accidents no doubt placed joint construction in general disfavor for a while. Joint construction, as it is today, is satisfactory, for better clearance is provided than was considered possible in the old days.

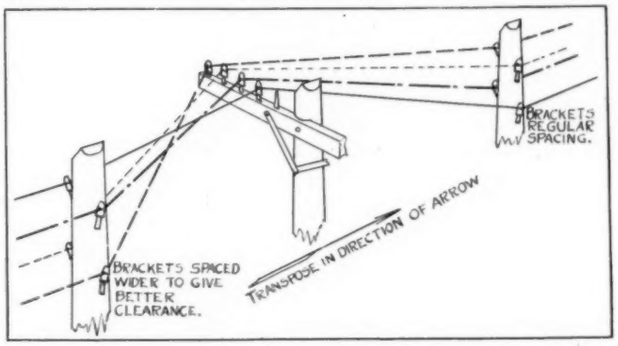
After that experience it was nearly a year before I again felt safe on an aerial cable.

Transposing Wires on Wood Bracket Leads in Texas.

The writer has gained much valuable information from "TELEPHONY's Engineering Data" page that is printed in each issue of TELEPHONY and these sheets are torn out and filed away each week for future reference. I am sure that hundreds, probably thousands, of others watch for this page each week and appreciate its value as I do, secretly hoping it will be continued. I thank you for TELEPHONY and especially the "Engineering Data" page.

In connection with the method of transposing wires on wood bracket leads, shown in the October 31 issue, Mr. Burden does not show us how to transpose two pairs (phantom transposition) without the aid of a three or four-point bracket. Phantom transpositions, types 1, 2, 3 and 4, are shown in Fig. 4, but that is a crossarm lead.

A three or four-point bracket cannot be used in a wood bracket group without using crossarms, one on each of three poles, at the location of the phantom transposition, with bracket on the middle crossarm. For this reason I submit in the accompanying sketch, my method of transposing two bracket circuits with one crossarm only.



Method of Transposing Two Circuits on Bracket Leads Using Only One Crossarm. Type 1 Transposition Only Is Shown.

I do not see the method used anywhere else but it is a complete success and can be used for two groups on wood brackets, although it is a bad practice to put as many as eight wires on wood brackets. When it becomes necessary to string a second group, it is time to crossarm the lead.

The method I submit may be of value to "the other fellow" and I pass it on. I show a No. 1 type only, which is sufficient to demonstrate the practicability of the method.

T. J. PAUL,
Plant Superintendent,
Del Rio & Winter Garden Telephone Co.

Del Rio, Texas.

Telephone Coin-Box Makes Excellent Nesting Place for Mouse.

In Vancouver, British Columbia, Can., a modern mouse chose a coin-box telephone set for its home. Arthur Eales, maintenance man of the British Columbia Telephone Co., investigated a trouble report of a permanent line signal and found this unusual case in a pay telephone in a confectionery store.

He opened the telephone box and found the cause of the trouble—a mouse was seated on a nest which it had built on the coin-control mechanism. The rodent's nest was made of felt, with which the box had been lined to prevent the rattling of coins. Mrs. Mouse had nibbled away as much of the lining as she needed to make her home comfortable.

The piece of metal, selected by the mouse as a homesite, rose and fell with the passage of coins through the box, so Mrs. Mouse evidently enjoyed many rides on this teeter-totter, until the bulk of the nest so congested the mechanism that all operations were stopped.

Latest Telephone News From England

Number of Telephones in England at End of 1931 Held Up Well Considering General Conditions—Great Progress Made in Converting Exchanges to Automatic—Young People's Telephone Exhibition in London—Some News Items

By TELEPHONY'S Special London Correspondent

As soon as the complete figures of world telephone growth during 1930 were available, revealing that for the first time since 1920 the figure had fallen below a million new telephones, it became a foregone conclusion that the world figure for 1931 would be still farther below the average.

The effects of the general depression in the commercial world had not been felt so acutely in 1930 as in 1931 when the "typhoon" was blowing at full force for 12 long months. People, cursed with an inclination to fear the worst and to count on it happening, began to say that the telephone business in 1931 would come practically to a standstill and that we should have all our work cut out to prevent a definite set-back in telephone growth.

These Jeremiahs, to reinforce their argument, pointed to the loss in Australasia in 1930 and to the spectacular fall in the growth figures in North America during the same period. They set us a dismal sort of proportion sum to work out: If the North American figure falls from between 800,000 and 900,000 on average to a paltry 150,000, what is going to happen to European figures and particularly to Great Britain's, where a year's growth of 120,000 has hitherto, under normal post-war commercial conditions, been considered good?

Well, it has been bad and we are just as glad as anybody else to turn our backs on 1931, but it has not been as bad as all that. Over 80,000 additional telephones in service as of December 31, 1931, means that we have gained some ground instead of losing it. Although final figures are not yet available, all the indications point to the emergence of an equally satisfactory —comparatively speaking—state of affairs in most of the European countries.

Germany has, of course, been going through a particularly difficult time, and it will be touch and go with her whether growth will just balance a heavy crop of cessations. Spain is almost certain to show a net gain in stations as well as France and Italy and, probably Russia.

Nobody knows what is going to happen in 1932 but it is quite clear already that the telephone administrations principally concerned are not going to let any grass grow under their feet; they are going out after new business as well as for the retention of existing business.

If general trade conditions improve, as we all devoutly hope, we may not fall so very far short of the mark of putting another million telephones into world service by the end of 1932. Here's hoping! And in the same breath, may it be permitted once again to this chronicler to express to TELEPHONY's readers all over the world his best wishes for success in 1932, whether it be in the telephone field or in their more personal resolutions, hopes and ambitions.

We have seen great progress during 1931 in the conversion of our system to automatic working, automatic exchanges having been brought into service at the rate of over one per week, exclusive of rural automatic exchanges, which have come definitely into favor and of which nearly 300 were installed during 1931.

Thousands of Children Visited the Special Section Designed for Them at the Telephone Exhibition at the Imperial Institute, London. A Bluecoat Boy Is Shown Trying the Telephone Kiosk.

There are now 5,050 exchanges (automatic and manual) working and 36,750 call offices, an increase during the year of over 200 and about 3,000 respectively.

Speech transmission has improved, and a beginning has been made in respect of an eagerly-awaited facility, "demand" service on inland trunk lines.

On the whole, in all the circumstances, and in all fairness, the verdict on Great Britain's telephone achievement during 1931 must be "Not too bad."

Teaching "The Young Idea."

The Young People's Telephone Exhibition opened at the Imperial Institute, London, on January 5. It is a far-sighted enterprise, which will do much to make the rising generation "telephone conscious."

Every form of telephone and telephone accessory that has yet been produced was on view for the use and instruction of the young people, and free telephone calls to the Dominions, the continent and to ships at sea are being given.

School Children Interested in the Very Latest Type of Telephone and Some Very Old Types, Once the Property of Lord Rothschild, Which Were Shown at the Young People's Own Telephone Exhibition at the Imperial Institute, London.

Not only at the Exhibition in London but in schools all over the country, pupils are being taught by the Post Office in conjunction with Telephone Development Association officials and local educational authorities all about the telephone and its uses.

The Post Office's New Campaign.

The British Post Office is now making the most vigorous bid in its history for telephone business and is conducting a far-reaching publicity campaign. The results will, it is hoped, do much towards the extension of the service. Efforts are being made to bring people to realize the measure of economy in time and money afforded them by having the telephone in the home.

London is a city that is making a markedly increased use of the telephone. Nine years ago there were 8,000,000 calls recorded per week. Last year this number had risen to 14,000,000 a week, and in 1932 it is anticipated that the number will be millions more.

London-South Africa Service Opening!

English subscribers are able at present to talk to about 95 per cent of the world's telephone users. These facilities will be further increased in a few weeks' time when, it is anticipated, the service between London and South Africa will be available.

A step which should make for the spread of the telephone habit in the outer or "dormitory" districts of London is the extension of the London telephone area from 750 to 1,000 square miles. This will result in better working and administration. Fifteen head automatic exchanges will be completed in London during 1932. "On demand" service from London is to be extended to Bristol, Leeds and Manchester, and improvements in trunk and toll services will be made.

Thirty-two per cent of the lines in London are on automatic exchanges at present. By the end of the year the percentage should be 44. There are now 7,500 call offices in London but it is being repeatedly emphasized to the authorities that the number is not enough. Nine hundred were opened in 1931.

Telephone New Year Greetings.

It is significant that thousands of subscribers all over Britain began the year 1932 with the telephone in their hands. Notable among them was the Prime Minister, MacDonald, who exchanged greetings from Lossiemouth, Scotland, with many of his friends in London. The number of greetings at Christmas and New Year by telephone from certain provincial towns increased the normal telephone traffic by more than 10 per cent. The number of overseas calls was also unexpectedly high considering present economic conditions.

King George V is giving England a lead in the use of the telephone. The long distance Britain-to-Australia telephone system will, it is understood, be used by him when he opens the new bridge across Sydney Harbor. The King's message will be given personally and will be broadcast all over Australia instead of being read by the governor of New South Wales as had been previously arranged.

No hamlet in England, however far off the beaten track, need be without its own telephone exchange now. At John O'Groats and at Land's End there are such country automatic exchanges; and between the two throughout the length and breadth of the country, there are 600 more. An exchange is established immediately wherever there are eight prospective subscribers, and they have the advantage of efficient day and night services at the usual charges even in the most isolated districts.

The lack of telephones in isolated parts of the country where sudden storms are liable to spring up, has been in the past a real menace to stranded travelers. The news that Dalwhinnie, which lies in the lonely Dunnochter Pass, known to many American tourists, on the Great North Road in Inverness-shire (Scotland), is to have an automatic telephone shortly, will be welcomed by motorists all over the country.

"Your Servant the Telephone."

A young woman lecturer is now on a lecture tour of Great Britain to convince British housewives that no home is properly run unless it is equipped with a telephone. She is Miss Simonsen, a young member of the staff of the Telephone Development Association, who graduated from the stage to the telephone world, and now finds herself on the lecture platform, speaking in cafes, in art galleries, in public libraries, in showrooms, in theaters, etc.

Here is one excerpt from her lecture at Birmingham:

"From a woman's point of view, one of the greatest conveniences of modern life is shopping by telephone. It has taken the place of the daily tramp, in all weathers, from shop to shop with the bag that grows heavier at every call; the elbowing through crowds, the long waits at counters, and the return home so tired that you are not fit for anything.

In America, shopping by telephone has reached a fine art, and large stores have now special departments to deal with telephoned orders. America's example is gradually being followed here, but I do ask you all to make more use of your telephones. I, for one, do not know a more faithful or reliable, and more economical and more willing extra hand in my house than 'your servant the telephone.'"

The Most Costly Telephone Call.

A telephone official in London has just revealed that the largest amount ever charged for a single telephone call in England was $1,440. The call took place between an American visitor in London and a colleague in New York.

The visitor talked for 59 minutes, but on being presented with the bill, his only comment was that, had he known, he would have had another minute to make up the hour! Charges between Britain and the U. S. A. have been lowered since this telephone call was made.

Signs of Improvement in the Telephone Industry.

In a letter extending New Year's greetings, Sir Alexander Roger, of London, England, chairman of the Telephone Development Association of Great Britain, says:

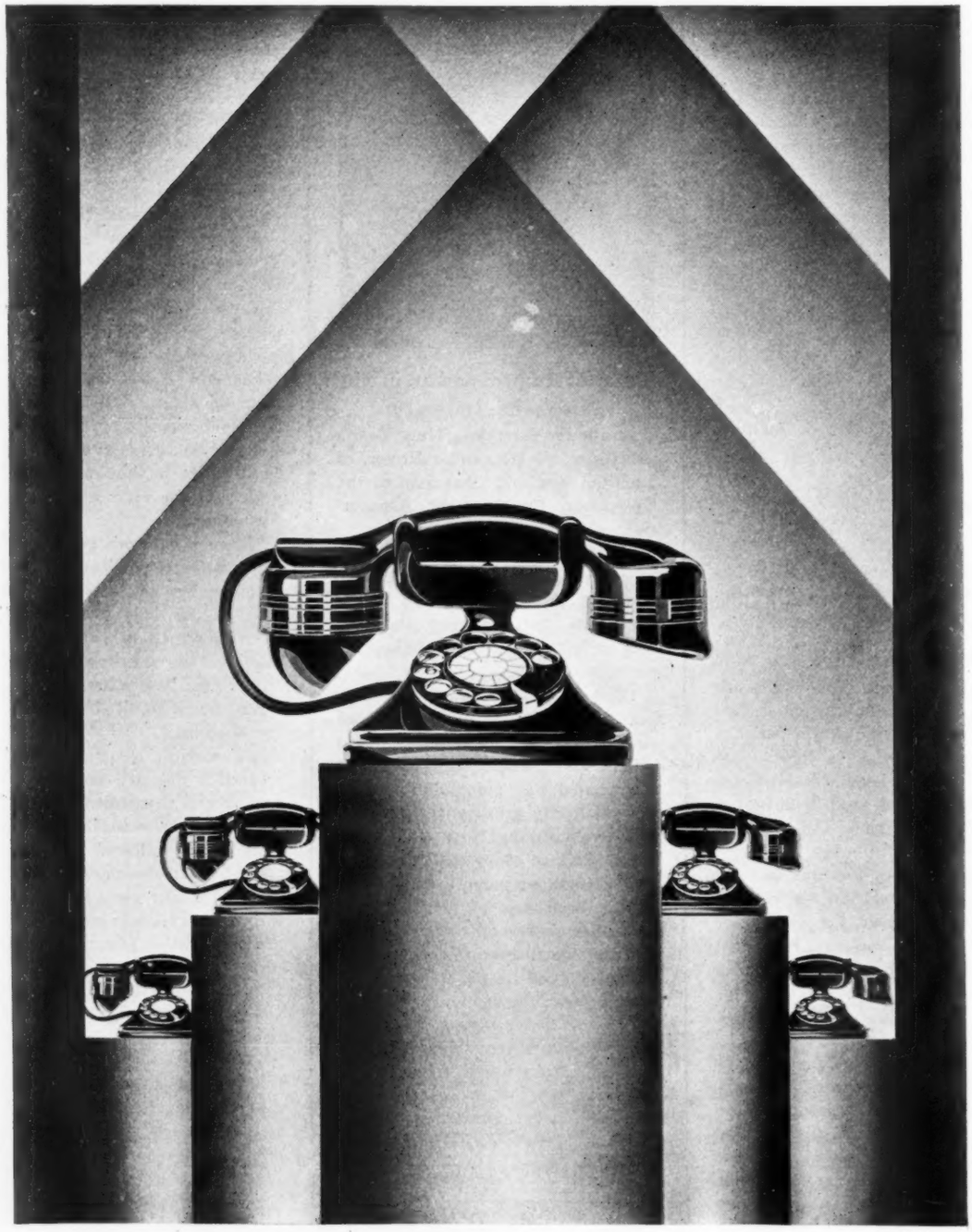
"We are certainly living in times of depression, but I think there are signs of improvement and I am sure that the telephone industry will be in the forefront when prosperity returns.

"The telephone industry is coming through these difficult times considerably better than many others, and the admirable standard maintained by 'Telephony' makes it particularly gratifying to receive your encouraging New Year message. I think every one connected with the industry can look forward to the approach of better times, and when these come your journal will be able to take a just pride in having played its part in securing their return."

Sir Alexander Roger is one of the most prominent telephone men in Great Britain and is a leading factor in manufacturing, operating and financial corporations identified with international telephone affairs.

Prices in the Metal Markets.

New York, January 18: Copper—Quiet; electrolytic spot and future, 7⅜@7½c. Tin—Easier; spot and nearby, $22.12; future, $22.37. Lead—Steady; spot New York, 3.75c; East St. Louis, 3.55c. Zinc—Easier; East St. Louis spot and future, 3.00c.



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The Monophone's Supremacy

Is Result of Careful Design—Plus Modern Materials

THE flowing lines and rugged strength of the Monophone are not the result of haphazard chance. These qualities with the excellent operating characteristics of this set, represent years of painstaking experimentation research.

During hundreds of designs and materials were thoroughly in order that all of these desirable attributes might be combined in one single instrument. Bakelite was found the ideal material for the Monophone, since it can be molded into artistic and graceful shapes, its lustrous finish will not wear off, it is highly dielectric, and it combines light weight with mechanical strength.

The possibilities of the Monophone have now been proved over years of service. Its widespread and increasing use, the constantly growing volume of orders and its low maintenance cost have definitely established its superiority. Even a casual investigation will indicate its many advantages. Send for catalogs and prices—TODAY.

The Monophone bases shown in the foreground have just been taken from the Bakelite press, where high temperature and thousands of pounds of pressure have formed this remarkable material into lustrous and permanent shape. Automatic Electric Company was the originator of the use of Bakelite in general telephone construction.

Automatic Electric Company

Manufacturers of *Strowger Automatic Dial Telephone and Signaling Systems*

CHICAGO, U. S. A.

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Here and There in Telephone Work

P. B. X. Current Supply; Utilizing Central Office Power (Cont'd).

By John A. Bracken.

To properly operate a P. B. X. switchboard from the central office battery a size of conductor for the electric current should be figured that will meet the average use of the equipment and at the same time meet the full capacity requirements of the switchboard.

Suppose it is desired to transmit electric current of a certain value to a P. B. X. switchboard. By Ohm's law the resistance in the conductor to meet the voltage drop requirements can be found by dividing the permissible loss in volts by the current. For example, what would be the resistance of a conductor in which a current of 1.5 amperes is flowing, to give a voltage drop of 8 volts? $R = E/I$ or $24/1.5 = 16$ ohms.

Suppose the distance to be 600 feet. Then the circuit distance, assuming it to be a full metallic feeder system, is 1,200 feet. A size of conductor is required which will have a resistance of 16 ohms for a 1,200-foot length. Such a conductor would be a No. 13 B & S gauge copper wire.

The size of wire can be obtained by remembering that 1,000 feet of No. 10 B & S gauge copper wire has a resistance of nearly 1 ohm at 68 degrees Fahrenheit, and that an increase of 3 sizes in the gauge number divides the resistance by approximately 2, and vice versa. Thus, the resistance of No. 7 wire is half that of the same length of No. 10 wire, and the resistance of No. 13 wire is double that of the same length of No. 10 wire.

Consecutive sizes of wire differ in resistance by approximately the cube root of 2 (about 1.25); that is, the resistance of a definite length of No. 11 wire is nearly equal to 1¼ times the resistance of the same length of No. 10 wire, and the resistance of a definite length of No. 9 wire is nearly equal to the resistance of the same length of No. 10 wire divided by 1.25.

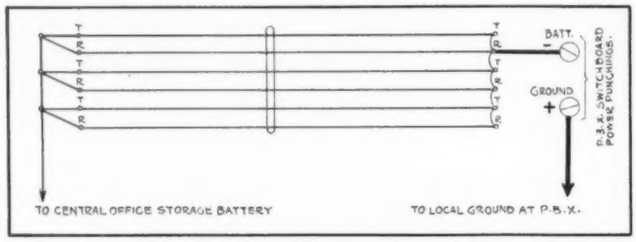
For a difference in gauge number of two, the corresponding factor is the cube root of 4, or 1.58. By keeping these figures in mind the resistance of any length of any size of wire can be determined with a fair degree of accuracy.

The economy in the use of current supply direct feeders composed of cable conductors from the central office to a P. B. X. switchboard will depend upon the nearness of the P. B. X. to the central office and the extent of the available conductors.

It the P. B. X. is located close to the central office, and plenty of cable conductors are available, enough should be used to permit a 24-volt supply feeder from the central office of resistance low enough to maintain the minimum allowable E. M. F. during periods of maximum load, recommended by the manufacturer of the P. B. X. switchboard. Figs. 1 and 2 show methods of using cable conductors. A reduction in the number of cable conductors required for operating a 24-volt P. B. X. may be made by using a 24-volt feeder circuit from the central office when such E. M. F. is available.

In case the required number of cable conductors are excessive a further reduction may be obtained by installing a floater battery at the P. B. X. The number of cable conductors needed for supplying charging current to the floater battery is considerable less than the number required to supply the same switchboard without a floater battery, for the reason that during light operating load at the P. B. X. the floater battery is being charged and during periods of heavy load it discharges.

If such conditions exist that the fore-



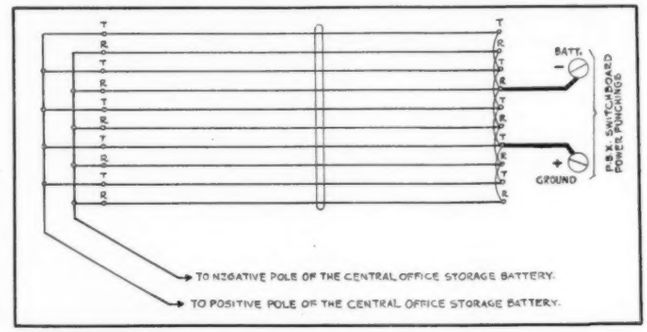

BATT.
GROUND
P.B.X. SWITCHBOARD POWER PUNCHINGS
TO NEGATIVE POLE OF THE CENTRAL OFFICE STORAGE BATTERY.
TO POSITIVE POLE OF THE CENTRAL OFFICE STORAGE BATTERY.

Fig. 1. Method of Using Three Cable Pairs for Conducting Central Office Current to a P. B. X. and Local Ground at the Switchboard—Fig. 2. Method of Using Five Cable Pairs for Conducting Central Office Current to a P. B. X. Full Metallic.

CABLE CONDUCTOR LOOP RESISTANCE TABLES.

GAUGE OF CABLE B & S NUMBER	TEMPERATURE	RESISTANCE PER 1000 LOOP FEET
19	68° FAHR.	16.3 OHMS
20	68° FAHR.	20.4 OHMS
22	68° FAHR.	32.4 OHMS
24	68° FAHR.	51.9 OHMS
26	68° FAHR.	81.8 OHMS

GAUGE OF CABLE B & S NUMBER	TEMPERATURE	NUMBER OF LOOP FEET PER OHM
19	68° FAHR.	62.2
20	68° FAHR.	49.3
22	68° FAHR.	31.0
24	68° FAHR.	19.5
26	68° FAHR.	12.2

APPLICATION OF THESE TABLES WILL GIVE THE LOOP RESISTANCE OF EACH SECTION OF CABLE. THE SUM OF THE RESISTANCE OF THE SECTIONS OF CABLE WILL BE THE LOOP RESISTANCE OF THE CIRCUIT.

Fig. 3. Reference Table Showing Resistance of Usual Cable Pair Sizes.

B & S GAUGE COPPER WIRE SIZE NO.	TELEPHONE CABLE EQUIVALENTS OF WIRES AS GIVEN IN THE COLUMN UNDER COPPER WIRE. BROWN & SHARPE WIRE GAUGE				
12	5 NO.19	6 NO.20	10 NO.22	16 NO.24	18 NO.26
14	3 NO.19	4 NO.20	7 NO.22	10 NO.24	16 NO.26
16	2 NO.19	2½ NO.20	4 NO.22	6 NO.24	10 NO.26
18	1¼ NO.19	1⅔ NO.20	2½ NO.22	4 NO.24	7 NO.26
19	1¼ NO.20	2 NO.22	3 NO.24	5 NO.26	
20	1⅔ NO.22	2½ NO.24	4 NO.26		
22	1½ NO.24	2½ NO.26			
24	1⅔ NO.26				

NOTE: WHERE THE TABLE GIVES THE NUMBER OF WIRES IN FRACTIONS USE THE NEXT WHOLE NUMBER. EXAMPLE: THE EQUIVALENT OF A NO. 18 WIRE IS 1¼ NO.19. IN THIS CASE USE 2 NO.19 WIRES, ETC.

Fig. 4. Conversion Table Giving Number of Telephone Cable Wires Equivalent to a Larger Wire.

going methods of supplying current to the P. B. X. may be unsatisfactory for various reasons, then the use of storage batteries and a charging unit installed at the P. B. X. should be considered.

In order to determine the required number of cable conductors necessary for current supply to a P. B. X. from the central office proceed as follows:

1. Determine the allowable resistance in battery feeders as recommended by the maker of the particular type of switchboard for a given maximum number of cords in use.

2. Calculate loop resistance in ohms of one pair of cable conductors from central office to the P. B. X. If a combination of cable gauges, such as Nos. 22 and 24, are used, it will be necessary to figure the loop resistance of each length separately and then add the resistance in ohms together. Thus, the resistance of 500 loop feet of No. 22 B & S gauge cable equals 31.2 ohms, and resistance of 500 loop feet of No. 24 gauge equals 25.95 ohms, 31.2 plus 25.95 equals 57.15 ohms. The tables shown in Figs. 3 and 4 may be put to good use in this connection.

3. Divide the loop resistance by 4.

4. Divide the results by the resistance allowed at the P. B. X. This will give the number of cable conductors required to supply operating current with local ground at the P. B. X.

Example: Assume a 10-cord pair switchboard with an allowable resistance of 9.5 ohms. The P. B. X. is located 1,900 feet from the central office, and conductors in a No. 22 B & S gauge cable are to be used. How many cable conductors will be needed to carry the current on a 24-volt circuit?

Loop resistance of 1,900 feet No. 22 B & S gauge cable conductors is 61.5 ohms. 61.5/4 = 15.4 ohms. 15.4/9.5 = 1.6 cable pairs. In actual practice in this case, two cable pairs connected together would be used instead of just three conductors for local ground at P. B. X.

The number of cable pairs for full metallic current supply to the P. B. X. equals item (3) multiplied by item (4). For instance, in this case if it is desired to furnish current to the P. B. X. on a full metallic circuit, the number of cable conductors or pairs required would be 1.6 times 4 equals 6.4 pairs. In practice 7 pairs or 14 conductors would be used, in which all the tip conductors are connected to the positive side of the central office storage battery and all the ring conductors to the negative side of the central office battery.

Sufficient cable conductors that would be needed for supplying operating current to more than one P. B. X. can be calculated by this method as it is practical to operate more than one switchboard from the same current feeder circuit. This practice, however, has the disadvantage of causing several switchboards instead of only one to be put of service in case of a blown fuse at the central office, trouble in the feeder circuit, etc.

When station bell-ringing power is supplied to the P. B. X. from the central office ringing generator, the usual practice is to use but one cable pair between the central office and P. B. X. for this purpose.

Rainfall Reporter Uses Sequence Long Distance Calls.

One of the many specialized services rendered by the Pacific Telephone & Telegraph Co.'s long distance operators is that given on what are known as sequence calls. If a subscriber wishes to call a list of people located in various towns, instead of placing each call separately, he may give the entire list at once to the long distance operator and she completes the calls one after another, in sequence.

Many large firms call the same list of numbers every day or every week, to give or take orders, or to make reports of business. Usually these subscribers place their regular lists with the long distance operator, who assigns codes to each list by which it may easily be identified in the future by both the subscriber and the operator. The toll tickets may thus be recorded in advance in order to save time.

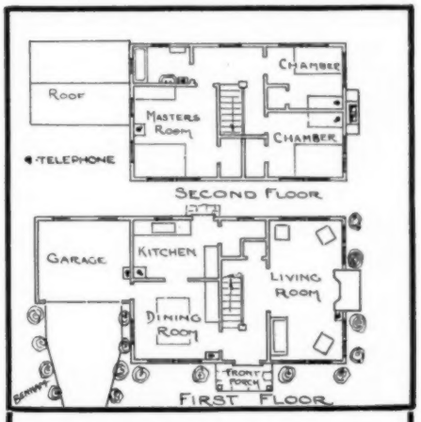
When the subscriber is ready, he calls for the sequence operator and asks to have list "A" started, or "W" or "X" as the case may be. When the sequence operator has the called number or party on the line, she rings back the calling subscriber and tells him that she has "A-1" or "A-2" on the line. By looking at his list, the subscriber will then know who "A-1" or "A-2" is.

In the Los Angeles long distance office special positions are used for the handling of these sequence calls. Ordinarily, there are about five operators during the morning busy hours, although during stock market flurries there are sometimes as many as 25 needed.

Two of the most experienced of these sequence operators are Mrs. Nellie McAree and Mrs. Flora McKee, and so familiar are they with the likes and dislikes of their regular customers that one could almost believe them to be employes of whatever firm they happen to be serving.

Two very interesting lists which are used frequently during the winter and spring, although not always frequently enough to please southern California, are the two known as rainfall lists, one of 60 calls from the Los Angeles Examiner and one of 70 calls from the Los Angeles Evening Herald. Every day during a storm, as the weather bureau insists on calling a quarter of an inch of rain, and sometimes twice a day during heavy rainfall, John H. Clark, of the Herald, and Jimmy Crenshaw, of the Examiner, speak the code letters which start the sequence operators putting up connections to points all over southern California.

Some person in each locality has been appointed to measure the rainfall to a hundredth of an inch and to observe weather conditions in general, and report this information whenever the newspapers call for it. On the same day one sees in the paper the amount of rainfall to date, as well as the amount in the recent storm, listed by towns all the way from Santa Barbara to San Diego, and readers may note whether their communities received more or less moisture than their neighbors.



EXTENSIONS AN' LIGHTS

By "Buck."

When they first put electric light into our house, why, ev'ry night the whole durn family would camp aroun' that one an' only lamp.

But soon we found one light was not enough an', by heck, we got the house all wired; so, in each room we now have lights, dispellin' gloom; an' in the livin' room, by gum, there's bridge-lamps, table-lamps an' some a-stickin' outa fixtures neat. There's lights 'bout ev'ry few durn feet, all over that ole house. When lit, the current used is quite a bit!

Of course, we got a telephone, 'twill take each natch'ral talkin' tone to any city in the land or Spain or any foreign strand, or to the office, shop or store. It saves us minutes by the score, each day.

How many have we got? Fifteen extensions? We have not! We've got one set down in the hall an' one upstairs an' that is all!

By gosh! I think I'll start a boom to put a telephone in ev'ry room, a set by Dad's ole easy-chair an' one by each durn bedside; there should be one in the bathroom, too, believe that would save time; don't you? An' in the basement we'll have one, down where the fam'ly washin's done.

Now, them wot sells extension telephones could gather in the plunks an' bones, if fer extensions they would fight like them wot sells electric light.

Progress of Past Half Century

Rapid Strides in Development of Telephone Service in Recent Years Gives Idea as to Unlimited Possibilities for Future—Address at Operators' Conference During Convention of Up-State Telephone Association of New York

By Mabel P. Sellvin,

Chief Operator, Jamestown Telephone Corp., Jamestown, N. Y.

Can you visualize what this day would be like if we dropped back about 60 years—no telephones, automobiles, electric lights, radios or movies? It took hours, days, weeks or sometimes months to do errands. On March 10, 1876, in Boston, Mass., a Scotch professor was experimenting in his garret with what he supposed was musical telegraph. He spoke into the wooden box which contained it. This box was connected by a wire 30 feet long to a duplicate box in charge of an assistant in the basement of the building.

The first words spoken by Dr. Bell were, "Mr. Watson, come here; I want you." Mr. Watson in amazement, dropped the box and rushed up the three flights of stairs, burst into the garret and exclaimed, "It talks—I could hear you!"

Those two telephones have increased to over 20,000,000 telephones in the United States and the first 30 feet of wire has grown into more than 83,000,000 miles of wire, aerial and underground cable. In the year 1892, one-half of the people of the United States were within talking distance of one another. Now, 91 per cent of the world's telephones can be connected with one another. The first Independent telephone companies were formed in the year 1895. They extended the telephone into new territory and have done much toward its advancement.

In this marvelous age in which we are living, do we pause to remember that it was only 16 years ago that transcontinental telephony began; that 10 years ago the United States had direct communication by cable with only a few countries and today it is connected by means of radio with about 30 countries?

Only a year ago, ship-to-shore service was inaugurated with four of the liners operating between the United States and Europe. In April of 1930, the Canadian National Railways established regular telephone service to two of their moving trains.

With the installation of the first telephone exchanges, boys were used as operators. They were a complete failure. Nothing could be done with them. They were immune to all requests for discipline. They were soon replaced by young women with quiet voices, deft fingers, patience, courtesy and attentiveness. Girls were easier to train; they did not waste time in retaliatory conversation. They were more careful and usually gave a soft answer that did not provoke the wrath of the calling party.

In the year 1902 the first telephone school for the education of the operator was established in the larger cities. It is now a most exclusive school. Not more than one girl in ten can measure up to its standards for admission.

When I went to work for the telephone company, in the years 1907, we had three

A Brief Summary of Telephone Developments in the Past Half Century, as Given by Mrs. Sellvin, Shows How Important Telephone Service Has Become to the World.

toll positions, five local positions and an information desk. We were allowed to listen in with an operator for a few days; then we began to work with an experienced operator plugged in on our board for several days. Within the next few months we were allowed to work information and the toll board.

We did not have any designation strips and had to memorize what trunks were on the 28 toll jacks. Duplicate tickets were made on every call. A few years later the single-ticket method of operating was established. We have improved the speed of service from nine minutes back in the year 1920 to about two minutes in 1931 with the CLR operating method.

Years ago, we struggled with noisy toll lines and repeated many toll messages. Now, with the constant cable improvements, repeaters and similar items, and the diligent work on the part of the traffic and plant departments with poor transmission reports, the toll subscriber can carry on his conversation with ease and clearness.

Rural service has been improved in some localities to such an extent that the service rendered is the same as the city subscriber receives. In our company, all iron wire has been replaced by copper wire and, with the installation of our four new automatic exchanges, the rural subscribers have 10-party full-selective service. When a subscriber's bell rings he knows the call is for him.

The first crude switchboards have been changed to masterpieces of telephone engineering. Think of the stupendous task of having engineered these switchboards to take care of not only a few calls but millions of calls. Invention after invention has been perfected with the results of improved magneto switchboards, super-speed common battery switchboards, and the automatic switchboards.

The traffic department assists the engineering department by making accurate peg-count records to provide statistical data, from which adequate facilities may be engineered and provided for handling all groups of traffic. Telephones have been perfected not only from a transmission standpoint but have been changed to a telephone of beauty, such as the new handsets in many beautiful colors.

Good toll service, today, requires adequate local service, and adequate local service cannot be given without the cooperation of every department and every employe of the telephone company. The subscriber first comes in contact with the commercial department which takes the order for the telephone. Next, this order is passed along to the plant department which assigns the telephone number, cable pairs and terminal, installs the telephone, and is responsible for keeping it in good working condition.

Then the traffic department prepares the record of the telephone on the alphabetical, numerical, condensed-numerical and street address files and becomes responsible for giving the service. The commercial and auditing departments then render the bills and collect the money. If any of these departments or employes fall down on the job, the subscriber forgets all about the others who have performed 100 per cent.

Years ago, very few companies felt the need of drives for new business. Now every employe has been enlisted as a sales representative. Our last weekly report

showed that 65 per cent of our employes are sales conscious.

Some companies supply their subscribers with toll directories of frequently called numbers. Our company has supplied more than 200 of these directories to principal toll-users, keeping them corrected from time to time. These directories have been the means of saving valuable time and giving the subscriber a better, faster grade of toll service which has materially increased the number of toll calls.

Personal contacts should be made with P. B. X. operators and all of the subscribers that it is possible to reach from time to time. Our P. B. X. instructor visits the P. B. X. operators at their switchboards and they have all made a personal tour through our building. When we held open house for the public, recently, 3,000 people visited our new building in three days and 3,000 personal contacts were made.

Years ago, the operator came to work and hung her wraps in a locker somewhere, if she were lucky enough to have a locker, and went right into the operating room. Some telephone companies, today, know that pleasant surroundings pay big dividends, and provide locker, dining and rest-rooms, posture chairs, adequate lighting and ventilating systems, Celotex ceilings, etc.

After having provided all these comforts, it requires constant checking and attention to keep them in good condition. The comparatively small additional investment and maintenance required to provide these modern necessities or conveniences are thoroughly justified by improved employe relations, which are reflected in the attitude of employes toward the company's patrons. Employes appreciate such conveniences and give better service which brings more business.

Telephone progress—figures show that there is one telephone for every six people in the United States. Communication by telephone is fast becoming universal. Considering what has been achieved by science in the past decade, one would be foolish to pronounce any suggestion for the future as an impossibility.

Results of All-Employes' Sales of Northwestern Bell Company.

The all-employe sales campaign of the Northwestern Bell Telephone Co. has been highly successful in preventing a disastrous slump in business.

When the company began last year, it had 662,252 stations in service. The first two months showed slight losses, and to head off what looked like a big drop in business, the employes were organized more effectively. The result was a gain of more than 2,000 stations, which brought the total in service at the end of April to 663,774.

Then the hard times struck the farmers, with the low price of wheat and other farm products, and for the months of June and July a total loss of 4,008 stations were recorded. Better organization and harder work stopped the ratio of losses for the next two months, but the trend was not stopped. The total number of stations in service now is below 650,000, although nearly 28,000 new stations were connected in the first ten months of the year.

Sales organization has been directed along the pushing of sale of special services to users. With 11,000 men and women busy on the firing line, the managers feel sure these losses will be more than made up with the tide of business turning. The impetus given is certain to carry on for months to come.

The loss of 13,000 stations net does not indicate a corresponding decrease in revenue, as is indicated by the fact that along with getting 28,000 "in" orders for telephones, the total number of items sold was nearly 96,000, or about double the number sold a year ago. Naturally most of these represent extensions sold, but they also cover almost every one of the 50 or more services that can be sold in connection with telephone service.

Answers to Traffic Questions Presented on Page 17.

1. As no record is kept of incoming toll calls, this information should be given to the called station, saying, for example: "I am sorry, we do not keep a record of incoming calls."

2. If you receive a report of "room telephone da," give this report to the calling party. While the report of "room telephone da" is no longer a chargeable report, this report is considered in general as relating to the called party. The classification of the call does not change as it is a person-to-person call, because you have reached a P.B.X. operator at the called station.

3. On a built-up circuit if you receive a report of "NC" or "All trunks busy" when a call order is left and the intermediate operator asks you to hold the circuit, you may hold the circuit five minutes.

4. CLR stands for "Combined Line and Recording," meaning that the operator who records the call also makes the first attempt to complete the call.

5. If the order is not understood say, "What number, please?" If you still do not understand say, "I am sorry, what number, please?" If you still do not understand, refer the call to your supervisor.

BUFFERS

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

A private secretary to a certain very busy business man prided herself on keeping her employer from being unnecessarily held up by unimportant callers. Although needful, it would seem that this feature of her responsibility would require great tact and smoothness in handling.

However, she wasted little time and few words on many of her employer's callers. There was a finality in her manner of disposing of some callers which was more forceful than words. It seemed to add to her statement, "Mr. Freeman is engaged. (You needn't sit around here waiting to see him.)"

Of course, Miss Sharp could appear very pleasing to certain of her employer's callers. So all went well until one unlucky day a group of "foreign-looking fellows," as she termed them, called to see her employer. She quickly and curtly ridded the office of them.

"I am expecting important callers. Has anyone been in?" asked her employer upon returning from lunch.

"No. Only some foreign-looking fellows," glibly replied Miss Sharp.

What had she done? She caused her employer to lose an important contract besides influential new customers; they never came back. Her action seems unpardonable. It probably was, and yet, if her employer but knew it, he likely lost other customers and prospects through her.

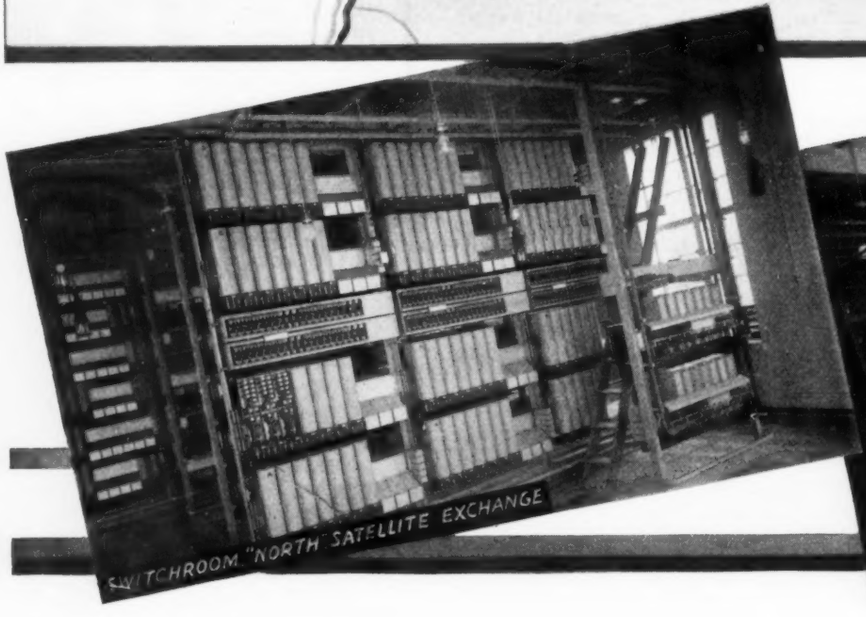
I am inclined to believe he was partly to blame for the great loss, for he probably never bothered himself to know how she handled his callers so long as she protected him from annoyance and loss of time. Buffer service: A buffer is a device placed at each end of a railway car which serves to lessen the jar when two cars come together.

A secretary to a busy business man should be a person who strives to prevent any jar between her executive and his customers whether she is able to contact them at once or not, especially the latter.

P. B. X. operators, will you please make a note of this? Your responsibility is as great as that of a secretary and, indeed, sometimes much greater.

Bristol

DIGAN BAY
PEMBROKE
GLAMORGAN
BRISTOL CHANNEL
R. Severn.
SOMERSET.
DEVON.


SWITCHROOM "NORTH" SATELLITE EXCHANGE

SWITCHROOM "WEST" SATELLITE EXCHANGE

STROWGER

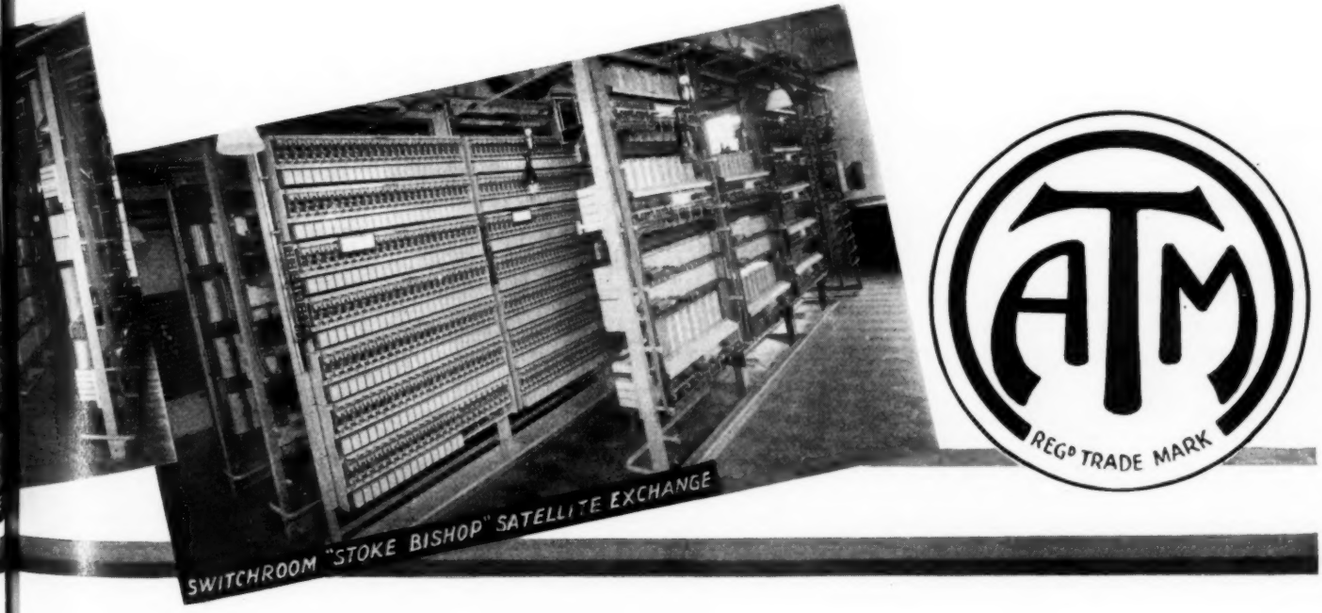
West Countree!

THE conversion to 5-digit Strowger working of the telephone system in this "sovereign city of the west" was successfully accomplished with the recent cut-over of exchanges totaling, ultimately, 32,500 lines.

The equipment of these exchanges, comprising one central and nine satellite offices, is noteworthy as the first in Great Britain in which the entire Strowger equipment is mounted on single-sided racks, ensuring the recognized advantages of increased flexibility, saving of floor-space and improved protection for the apparatus.

The whole of the equipment was manufactured and installed to the order of the British Post Office by:

AUTOMATIC TELEPHONE MANUFACTURING CO., Ltd.
Strowger Works, Liverpool, England
ASSOCIATED COMPANY:
International Automatic Telephone Co., Ltd., London



SWITCHROOM "STOKE BISHOP" SATELLITE EXCHANGE

ATM
REGD TRADE MARK

The Financial Side of Companies

Miscellaneous Items of Interest Regarding Financial Matters of Telephone Companies—New Securities Issued During Past Month—Figures From the Monthly Reports of Larger Companies to Interstate Commerce Commission

October Operating Income of Class A Companies Decreases.

Compilations from reports of revenues and expenses of 103 telephone companies, as made to the Interstate Commerce Commission for the month of October, 1931, show gross operating revenues of $96,704,238 as compared with $100,990,768 for the corresponding month of 1930, a decrease of 4.2 per cent.

Operating expenses for October, 1931, were $64,997,093 as compared with $68,173,124 for 1930, a decrease of 4.7 per cent. The operating income for the same month was $23,209,247, as compared with $24,497,080 for 1930, a decrease of 5.3 per cent.

Operating revenues for the ten months ending with October, 1931, were $967,386,562, compared with $989,784,215 for the corresponding period of 1930, showing a decrease of 2.3 per cent for 1931. Operating expenses for the same period were $647,888,259 and $677,676,031, respectively, showing a decrease of 4.4 per cent.

The operating income for the ten months of 1931 amounted to $231,368,847, as compared with $227,193,049 for the same period of 1930, an increase of 1.8 per cent for 1931.

The companies, which include those having annual operating revenues over $250,000, had 16,941,225 telephones in service at the end of October, 1931, a decrease of 268,445 telephones, or 1.6 per cent for 1931.

Complete data were not available for the Ohio Cities Telephone Co. and the South East Public Service Corp. of Virginia for inclusion in this report.

Earnings of Pacific T. & T. Estimated Greater than 1930.

Net income of the Pacific Telephone & Telegraph Co. is estimated at $7.75 a share on the 1,805,000 outstanding common shares, based on preliminary income summaries, according to H. D. Pillsbury, president, in a letter to stockholders accompanying the regular quarterly $1.75 common dividend disbursement.

On this basis, the Pacific company's net profit for 1931 would approximate $18,908,750 and, after preferred dividend requirements of $4,920,000, would leave a balance of $13,988,750 for the common stock.

In 1930, net profit was $17,652,356, equal after preferred dividends, to $7.05 a share on the 1,805,000 common shares outstanding on December 31, 1930, and $8.06 on the average of 1,579,004 common shares outstanding during the year.

In his letter, President Pillsbury points out that the net loss of 27,485 telephones up to August 10, 1931, had been cut down to about 10,000 as of December 15 last, leaving a net loss of about 17,000 telephones, or approximately 1 per cent less than there were in service at the beginning of the year.

The Pacific company expended $35,000,000 during 1931 in construction expenditures for additions and betterments.

Eleven Months' Financial Statement of Northern Ohio Company.

The Northern Ohio Telephone Co., Bellevue, Ohio, for the 11 months' period ending November 30, 1931, had total operating revenues of $851,787.90 as against $873,320 for the same period in 1930.

Total operating expenses have been reduced to $518,723 for this period in 1931 from $556,893 the previous year. Net operating revenue shows an increase of $16,637, the figures being $333,064 and $316,427 respectively. Operating income was $246,829 compared to $232,672 and gross income amounted to $250,129 against $236,183.

General expenses were $14,172, interest on funded debt $80,336 and amortization of bond discount $4,400, making total deduction $98,908. This left a net for interest, dividends and surplus of $151,221, an increase of $12,908 over the figure of $138,312 for the 11-month period in 1930.

Items.	Month of October				Ten months ended with October			
	1931.	1930.	Increase or decrease (*). Amount.	Ratio, Pct.	1931.	1930.	Increase or decrease (*). Amount.	Ratio, Pct.
Number of company stations in service at end of month	16,941,225	17,209,670	*268,445	*1.6	.....	.....	.....	....
Revenues:								
Subscribers' station revenues	$60,192,163	$61,120,971	$ *928,808	*1.5	$596,638,085	$599,656,122	$*3,018,037	*0.5
Public pay station revenues	3,962,121	4,171,778	*209,657	*5.0	39,082,176	40,904,819	*1,822,643	*4.5
Miscellaneous exchange service revenues	948,223	914,953	33,270	3.6	9,377,992	9,053,782	324,210	3.6
Message tolls	24,925,522	27,805,097	*2,879,575	*10.4	254,273,368	271,763,012	*17,489,644	*6.4
Miscellaneous toll line revenues	3,937,754	4,101,757	*164,003	*4.0	40,062,369	40,687,939	*625,570	*1.5
Sundry miscellaneous revenues	2,706,963	2,840,456	*133,493	*4.7	27,611,301	27,369,014	242,287	0.9
Licensee revenue—Cr.	1,212,176	1,262,074	*49,898	*4.0	12,461,232	12,687,926	*226,694	*1.8
Licensee revenue—Dr.	1,180,684	1,226,318	*45,634	*3.7	12,119,961	12,338,399	*218,438	*1.8
Telephone operating revenues	$96,704,238	$100,990,768	$*4,286,530	*4.2	$967,386,562	$989,784,215	*$22,397,653	*2.3
Expenses:								
Depreciation of plant and equipment	$17,105,070	$16,421,686	$ 683,384	4.2	$168,211,227	$159,612,816	$ 8,598,411	5.4
All other maintenance	15,557,785	16,968,036	*1,410,251	*8.3	154,302,781	166,579,008	*12,276,227	*7.4
Traffic expenses	17,070,416	19,273,853	*2,203,437	*11.4	176,997,308	198,927,312	*21,930,004	*11.0
Commercial expenses	9,403,553	9,372,100	31,453	0.3	90,037,565	93,223,309	*3,185,744	*3.4
General and miscellaneous expenses	5,860,269	6,137,449	*277,180	*4.5	58,339,378	59,333,586	*994,208	*1.7
Telephone operating expenses	$64,997,093	$68,173,124	*$3,176,031	*4.7	$647,888,259	$677,676,031	*$29,787,772	*4.4
Net telephone operating revenues	$31,707,145	$32,817,644	*$1,110,499	*3.4	$319,498,303	$312,108,184	$ 7,390,119	2.4
Other operating revenues	91,831	82,853	8,978	....	1,025,599	963,193	62,406	....
Other operating expenses	60,367	54,810	5,557	....	623,153	584,260	38,893	....
Uncollectible operating revenues	779,008	833,818	*54,810	*6.6	7,636,500	7,711,068	*74,568	*1.0
Operating income before deducting taxes	30,959,601	32,011,869	*$1,052,268	*3.3	312,264,249	304,776,049	7,488,200	2.5
Taxes assignable to operations	7,750,354	7,514,789	235,565	3.1	80,895,402	77,583,000	3,312,402	4.3
Operating income	$23,209,247	$24,497,080	*$1,287,833	*5.3	$231,368,847	$227,193,049	$ 4,175,798	1.8
Ratio of expenses to revenues, per cent	67.21	67.50	*.29	....	66.97	68.47	1.50	....

Comparative Statistics Compiled from October Reports of 103 Class A Companies to the Interstate Commerce Commission.

The complete figures for the month of November and the 11 months ending November 30, 1931, are given in the accompanying table.

Total assets of the Northern Ohio Company have been increased during the past year, $15,038, to $4,459,475. Fixed capital installed is set at a figure of $4,041,581 on November 30, 1931, an increase of $41,124 over 1930's figure. The following is the balance sheet statement as of November 30, 1931:

ASSETS.	
Fixed capital installed	$4,041,581
Investment securities	13,190
Cash and deposits	37,598
Employes' working funds	1,480
Notes and accounts receivable	18,455
Due from subscribers	62,280
Other current assets	7,643
Material and supplies	116,391
Sinking fund reserve	16,367
Prepaid rent and insurance	6,009
Capital stock and debt discount unamortized	104,211
Other suspense accounts	34,000
Total assets	$4,459,475
LIABILITIES.	
Common stock issued	$1,496,275
Preferred capital stock issued (7½ per cent)	977,500
Funded debt 5½ per cent gold bonds due 1957	1,587,000
Audited vouchers and accounts payable	56,260
Interest accrued but not due	29,187
Service billed in advance	7,851
Accrued taxes	103,380
Dividends and other accrued liabilities	14,995
Reserve for accrued depreciation	112,998
Corporation surplus	52,816
Net income unappropriated	21,203
Total liabilities	$4,459,475

At the regular quarterly meeting of the board of directors on December 29, the quarterly dividend of 1¾ per cent was declared on the company's preferred stock. This dividend is the 118th consecutive quarterly dividend paid, representing 29½ years of uninterrupted payments by the Northern Ohio company and its predecessor, The Local Telephone Co.

	November, 1931.	Jan. 1-Nov. 30, 1931.
Operating Revenue:		
Subscribers' station revenue	$ 58,602.60	$656,576.11
Message tolls	14,346.41	163,128,26
Other operating revenue	2,112.22	32,083.53
Total operating revenue	$ 75,061.23	$851,787.90
Operating Expenses:		
Maintenance and repairs	$ 10,018.00	$ 97,664.24
Depreciation of plant and equipment	16,700.00	190,700.00
Traffic	11,259.44	132,711.11
Commercial	4,217.85	47,725.67
General and administrative	4,973.52	49,922.72
Total telephone operating expense	$ 47,168.81	$518,723.74
Net operating revenue	$ 27,892.42	$333,064.16
Less taxes: county, state and federal	7,215.00	86,235.55
Operating income	$ 20,677.42	$246,828.61
Add non-operating revenue	369.29	3,300.72
Gross income	$ 21,046.71	$250,129.33
Office and minor rents and uncollectibles	$ 1,414.91	$ 14,172.56
Interest on funded debt	7,296.66	80,335.79
Amortization of bond discount	400.00	4,400.00
Total deductions from gross income	$ 9,111.57	$ 98,908.35
Net for interest, dividends and surplus	$ 11,935.14	$151,220.98

Condensed Financial Statement of the Northern Ohio Telephone Co., Bellevue, Ohio, for November and the First 11 Months of 1931.

Associated T. & T. Co.'s Net Earnings for 1931.

The Associated Telephone & Telegraph Co., according to present indications, will report net profit for the full year of 1931 of about $1,650,000 after all charges, including depreciation and federal taxes.

After preferred dividends of $642,000 and class A dividends of $711,000, the balance for the common, of about $300,000, would be equal to 58 cents a share on 518,440 shares outstanding. In 1930, net amounted to $2,240,402, equal after other dividends to $2.81 a share on 367,726 common shares. All of the common is owned by General Telephone & Electric Corp.

Indicated net profit for last year on a priority basis is equal to about $8.26 a share on 122,000 class A shares, against $19.39 a share on 115,000 shares in 1930.

American Telephone & Telegraph Earns Dividend with Margin.

In a letter to stockholders on January 15, Walter S. Gifford, president of the American Telephone & Telegraph Co., assured them that the company had earned its dividend.

"While final results of the company for the year 1931 are not yet available," said Mr. Gifford, "preliminary summaries indicate that the company earned its dividend with a small margin without taking into account its proportion of the undistributed earnings of its subsidiary companies. The earnings of these subsidiary companies, including the Western Electric Co., Inc., taken as a whole also exceeded their dividend payments.

"The annual report of the company is in preparation and will be mailed to stockholders early in March."

Current Price Quotations on Listed Telephone Stocks.

	January 16, 1932. High.	Low.	Last.
American Telephone & Telegraph Co.	122¼	120⅝	121½
Associated Telephone & Telegraph Co., A	52	48½	50
Associated Telephone & Telegraph, 6%, pfd	64	64	64
Associated Telephone Utilities Co.	11¾	10⅛	11
Bell Telephone of Canada	119	119	119
Bell Telephone Co. of Pennsylvania	111¾	111¾	111¾
International Telephone & Telegraph Corp.	10½	9¾	10⅛
New England Telephone & Telegraph Co.	115	115	115
New York Telephone Co., 6½% pfd.	112	110¼	112
Pacific Telephone & Telegraph Co.	101¾	98⅞	99
Pacific Telephone & Telegraph Co., pfd.	109	109	109
Southwestern Bell Telephone Co.	112	112	112
Standard Telephone Co.	65	65	65
Telephone Bond & Share Co., 7% pfd	92	89	92
Telephone Bond & Share Co., A	42	40	40
Western Power, Light & Telephone Co.	7	6	6¾

OVER THE COUNTER.

	Bid. Jan. 16.	Asked.	Bid. Jan. 15.
Associated Telephone & Telegraph Co., 7% pfd.	75	76	..
Lincoln Telephone & Telegraph Co.	115	..	115
Mountain States Telephone & Telegraph Co., 8	112	..	111
National Telephone & Telegraph Corp., 7% pfd.	72	85	..
National Telephone & Telegraph Corp., A	50	..	..
Northwestern Bell Telephone Co., 6½% pfd.	103	107	103
Peninsular Telephone Co., $1.40	15	20	15
Peninsular Telephone, pfd., 7	88	92	88
Porto Rico Telephone Co.	70	..	70
Rochester Telephone Corp., 1st pfd.	100	105	100
Southern New England Telephone Co., 8	117	121	117
Wisconsin Telephone Co., pfd.	108	111	108

Western T. & T. Bonds Redeemed by American T. & T. Co.

The American Telephone & Telegraph Co. has completed the redemption, as of January 1, of the entire issue of $10,000,000 Western Telephone & Telegraph Co. collateral trust 5 per cent bonds which matured on that date, of which $9,488,500 were outstanding. Much of the issue was held in New England. The bonds were listed on the Boston Stock Exchange.

The bonds were assumed by American Telephone & Telegraph Co. in 1912 when the Western Telephone & Telegraph Co. was liquidated. They were secured by a pledge of stocks of affiliated telephone companies of a par value of $13,670,600 and $200,000 Home Long Distance Tele-

phone Co. (San Francisco) first 5 per cent bonds. The affiliated company stocks pledged were 78,000 shares of Cincinnati & Suburban Bell Telephone Co., 80,706 shares of Wisconsin Telephone Co., and 17,000 shares of Mountain States Telephone & Telegraph Co.

November Earnings of the Larger Telephone Companies.

Earnings of the American Telephone & Telegraph Co. for November and 11 months ending November 30, compared with earnings in corresponding periods of 1930, were made public January 9 by the Interstate Commerce Commission as follows:

November:	1931.	1930.
Total operating revenue	$ 8,452,629	$ 9,099,754
Net operating revenue	2,710,365	3,019,686
Net operating income	2,186,345	2,702,869
Eleven months:		
Total operating revenue	100,362,480	104,959,083
Net operating revenue	37,213,783	36,351,402
Net operating income	30,420,585	30,450,322

Earnings of other large telephone companies for November and also for the 11-month period ending November 30, are as follows:

Southern Bell Telephone & Telegraph Co.

	1931.	1930.
November gross	$ 4,789,146	$ 5,092,018
Net earnings	1,191,111	1,291,698
11 months' gross	54,470,095	56,942,800
Net earnings	13,647,455	13,540,808

New York Telephone Co.

November gross	$17,269,747	$17,663,888
Operating income	3,855,004	3,617,803
11 months' gross	193,653,133	195,552,555
Operating income	43,198,880	40,521,967

Chesapeake & Potomac Telephone Co. of New York.

November gross	$ 779,327	$ 744,534
Net earnings	200,079	173,622
11 months' gross	8,419,042	7,892,403
Net earnings	2,131,566	1,599,947

Chesapeake & Potomac Telephone Co. of Virginia.

November gross	$ 712,773	$ 692,515
Net earnings	188,441	176,341
11 months' gross	7,798,471	7,469,435
Net earnings	2,190,520	1,822,472

New Jersey Bell Telephone Co.

November gross	$ 3,958,118	$ 4,074,841
Net earnings	743,851	866,172
11 months' gross	45,451,110	45,739,742
Net earnings	10,114,381	9,687,145

Northwestern Bell Telephone Co.

November gross	$ 2,753,069	$ 2,886,297
Net earnings	620,131	690,971
11 months' gross	31,397,055	32,005,106
Net earnings	7,561,470	7,807,841

Bell Telephone Co. of Pennsylvania.

November gross	$ 5,937,870	$ 6,299,515
Net earnings	1,435,216	1,543,329
11 months' gross	67,124,152	69,454,651
Net earnings	16,805,187	16,533,397

Chesapeake & Potomac Telephone Co. of West Virginia.

November gross	$ 492,984	$ 512,617
Net earnings	100,524	109,025
11 months' gross	5,562,975	5,630,215
Net earnings	1,149,281	1,131,706

Diamond State Telephone Co.

	1931.	1930.
November gross	$ 167,695	$ 167,042
Net earnings	41,530	38,342
11 months' gross	1,834,008	1,816,625
Net earnings	523,355	476,670

Illinois Bell Telephone Co.

November gross	$ 7,136,360	$ 7,598,540
Operating income	1,197,877	1,427,421
11 months' gross	81,850,103	84,937,472
Operating income	15,270,629	16,189,216

Southwestern Bell Telephone Co.

November gross	$ 6,693,207	$ 7,139,398
Net earnings	1,578,832	1,819,589
11 months' gross	75,686,274	79,637,768
Net earnings	17,516,392	19,903,398

Wisconsin Telephone Co.

November gross	$ 1,423,037	$ 1,492,108
Net earnings	220,733	247,164
11 months' gross	16,387,177	16,706,010
Net earnings	2,850,758	2,952,165

Home Telephone & Telegraph Co. of Fort Wayne, Ind.

November gross	$ 106,101	$ 120,519
Net earnings	36,135	29,515
11 months' gross	1,209,572	1,246,026
Net earnings	302,635	226,603

Indiana Bell Telephone Co.

November gross	$ 1,037,292	$ 1,109,119
Net earnings	257,782	243,024
11 months' gross	11,825,916	12,315,912
Net earnings	2,903,764	2,871,400

Illinois Bell Telephone Co.

November gross	$ 7,136,360	$ 7,598,540
Net earnings	1,197,877	1,427,421
11 months' gross	81,850,103	84,937,472
Net earnings	15,270,629	16,189,216

Pacific Telephone & Telegraph Co.

November gross	$ 5,057,622	$ 5,249,418
Operating income	1,053,613	1,066,169
11 months' gross	57,531,494	64,507,376
Operating income	12,611,859	13,917,168

Michigan Bell Telephone Co.

November gross	$ 3,085,499	$ 3,349,548
Net earnings	492,495	343,192
11 months' gross	35,757,379	38,115,758
Net earnings	6,346,410	5,805,666

Mountain States Telephone & Telegraph Co.

November gross	$ 1,808,263	$ 1,922,143
Net earnings	350,860	468,435
11 months' gross	20,559,812	21,044,802
Net earnings	4,748,080	5,133,981

Northern New York Telephone Corp., Plattsburg.

November gross	$ 116,184	$ 113,605
Net earnings	24,419	28,287
11 months' gross	1,305,878	1,294,296
Net earnings	289,901	286,943

Ohio Bell Telephone Co.

November gross	$ 3,441,438	$ 3,628,860
Net earnings	705,934	825,361
11 months' gross	39,319,234	40,555,428
Net earnings	8,548,100	8,549,788

Pennsylvania Telephone Corp., Erie.

November gross	$ 197,527	$ 206,876
Earnings deficit	85,690	*82,180
11 months' gross	2,288,489	2,366,600
Net earnings	892,418	981,147

*Net earnings.

Rochester (N. Y.) Telephone Corp.

November gross	$ 442,010	$ 450,156
Net earnings	92,531	108,826
11 months' gross	4,923,183	4,903,303
Net earnings	1,111,866	1,131,412

Southern New England Telephone Co.

November gross	$ 1,432,609	$ 1,451,222
Net earnings	368,760	393,150
11 months' gross	16,165,583	16,078,114
Net earnings	4,185,924	3,959,266

Tri-State Telephone & Telegraph Co., St. Paul, Minn.

November gross	$ 471,132	$ 487,707
Net earnings	120,562	105,288
11 months' gross	5,275,969	5,355,957
Net earnings	1,400,288	1,417,765

Southern California Telephone Co.

	1931.	1930.
November gross	$ 3,170,311	$ 3,339,253
Net earnings	781,947	881,602
11 months' gross	36,598,366	31,880,358
Net earnings	9,583,921	7,966,512

West Coast Telephone Co., Everett, Wash.

November gross	$ 105,518	$ 117,435
Net earnings	35,630	32,666
11 months' gross	1,252,548	1,367,690
Net earnings	402,775	396,284

Home Telephone & Telegraph Co., of Spokane, Wash.

November gross	$ 133,129	$ 138,580
Net earnings	37,518	19,211
11 months' gross	1,485,394	1,564,709
Net earnings	332,782	283,288

New England Telephone & Telegraph Co.

November gross	$ 6,181,277	$ 6,218,687
Net earnings	1,402,922	1,350,682
11 months' gross	69,064,527	68,939,307
Net earnings	16,186,847	15,476,129

Large Nebraska Companies Report to Commission of Operations.

The report of the Northwestern Bell Telephone Co., for the first 11 months of 1931, filed with the Nebraska State Railway Commission, shows a loss of stations during that period of 14,982, there being 647,270 at the beginning of December. This is less than a 2 per cent loss.

The following figures are taken from the report for the year exclusive of December: Gross revenues, $31.982.920, a reduction of $616,281; toll reduction, $817,-313; exchange increase, $146,176; telephone operating expenses, $11,755,759, a decrease of $334,178; total telephone expenses, $24,-991,823, a decrease of $306,975 (depreciation increase, $277,377).

Net earnings, $6,941,097, a decrease of $309,388; sundry net earnings, $1,314,481, an increase of $382,081; total net earnings, $8,255,278, an increase of $22,773; balance net profits, $6,677,632, a decrease of $120,-960; undivided profits, $1,091,676; decrease, $654,369.

The November report shows: Gross revenues, $2,801,233, decrease of $85,476; net earnings, $684,107, decrease of $54,492.

The report of the Lincoln Telephone & Telegraph Co. for the first 11 months of the year shows a decrease of $117,056 in gross revenues, of which toll contributed $110,997 and exchange, $5,365. Gross revenues totaled $2,890,950; telephone operating expenses, $987,147, a decrease of $42,564; total telephone expenses, $2,297,345, a decrease of $121,450.

Net telephone earnings, $543,605, an increase of $4,394; sundry net earnings, $59,-552, a decrease of $2,875; total net earnings, $653,157, an increase of $1,519; balance net profits, $470,974, a decrease of $28,126; undivided profits, $31,282, a decrease of $6,681. The number of stations in service November 31 was 77,615, a loss for 11 months of 5,524.

The November report shows gross revenues of $251,800, an increase of $473; net profits, $65,074, an increase of $17,031.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Action by Congress on Holding Company Inquiry.

Adoption of the Rayburn resolution (H. Res. 59) for investigation of control of public utilities, other than railroads, by holding companies, investment trusts, associations, etc., was voted January 19 under a special rule voted by the House committee on rules January 16. The action of the committee followed a hearing in which the necessity of the investigation was pointed out by Representative Rayburn (Dem.) of Bonham, Texas, chairman of the House committee on interstate and foreign commerce, and Representative Parker (Rep.), of Salem, N. Y., its former chairman.

The resolution, it was explained by the proponents, provides for a comprehensive early investigation by the House committee, of facts regarding ownership of public utilities by holding companies operating in interstate commerce.

The contemplated investigation, it was further stated, will be under the direction of Dr. Walter M. W. Splawn, of the American University of Washington who conducted the investigation of railroad holding companies.

The original intention of proponents of the investigation was to determine the extent of control of utilities through securities holding companies, but it was later broadened to include every element of ownership and influence.

The sole purpose now, they explain, is to find "who owns" the power companies, the telephone companies, the radio broadcasting enterprises, and the bus lines, so that future plans for federal regulation can be mapped out in the light of actual conditions and actual control.

"We are aiming to develop the facts as to who owns and controls the public utilities of this country, just as we developed the facts in the last Congress so completely regarding the ownership and control of the railroads," Mr. Rayburn told the committee on rules.

"We are not aiming at punishing anyone. We are not proposing to hold anyone up to scorn. We are not proposing to try a case in the newspapers to produce headlines. We want simply and solely to find out who owns and controls these public utilities, other than railroads, which are already established; we want to ascertain the ownership, control and interrelationship of stock ownerships."

He said the investigation would be in the interest of intelligent legislation and warned against the possibility of "haphazard, ill-considered legislation." "Congress," he said, "should not legislate hastily." Some day soon, he stated, legislation to regulate the public utility holding companies would come before it, "and we want information on the companies. We don't want to legislate in the dark."

He said it was hoped the investigation would be concluded by the end of this session. The inquiry, he said, was impartial.

"Does the investigation propose to go into the questions of fairness of rates?" asked Representative Garrett (Dem.) of Houston, Texas.

"No," replied Mr. Rayburn. He explained that Congress had left the question of railroad rates with the Interstate Commerce Commission. "What we want to do," he said, "is to determine the facts regarding the other public utilities, look into abuses, ascertain what controls these utilities and to obtain all the facts necessary in respect to recommendations that any of these utilities should be put under the Interstate Commerce Commission."

Asked if the Federal Trade Commission is not doing something along the lines proposed, as to power, etc., Mr. Rayburn said that commission has already published 20 volumes of testimony and that it is not nearly through.

He said that a later resolution would be offered to authorize expenditures of not exceeding $100,000 for the investigation. He and Mr. Parker said the investigation of the railroad holding companies, producing valuable information on which future legislation could be based, cost $39,755 out of an authorized $50,000.

Investigations at Utilities' Expense Upheld by Wisconsin Court.

Upholding the most important section of Wisconsin's strict utility regulation law, the Wisconsin Supreme Court on January 12 held that the Wisconsin Public Service Commission could levy costs of investigations against utilities investigated.

With investigations pending against the Wisconsin Telephone Co. and the Wisconsin Power & Light Co., the commission found its hands tied when the telephone company obtained an injunction restraining the commission from collecting the costs of the investigation. The state supreme court dissolved this injunction.

The law upheld in this decision was enacted by the 1931 legislature and authorizes the public service commission to assess against a public utility all or part of the expense of an investigation.

In an action brought by the Wisconsin Telephone Co., Judge A. C. Hoppmann in the Dane County Circuit Court had ruled that the law was unconstitutional because it delegated legislative powers to the commission in authorizing it to remit the costs if such action should be found to be for the public good.

The supreme court, although admitting that the law is "not happily framed," finds that the power of the commission to make reasonable determinations upon situations as they arise, subject to judicial review, is an administrative and not a legislative power.

Notwithstanding the state supreme court's decision, the state senate on January 12 passed the Loomis bill (S. 6), changing the law to conform to Judge Hoppmann's decision.

Illinois Commission Considers Rate Reduction Case.

Figures intended to justify present rates charged by the Middle States Telephone Co. in Pekin, Park Ridge and Des Plaines were presented before the Illinois Commerce Commission on January 13.

The company was cited by the commission some time ago to show why these rates should not be reduced. The figures presented were in support of a motion by the company either to dismiss the case or to continue it without date.

Two company officials, Auditor Burns and Assistant Manager Poole, were on the stand. Testimony was introduced to the effect that the company's average net earning on a five-year basis was 4 per cent on the value of the company's property as fixed by the company.

The case was continued to January 27 at which time the company's motion to dismiss or continue the case without date will be considered by the commission. In the meantime the commission will investigate the figures as to the company's earnings.

Iowa Statutes Do Not Make Physical Connection Obligatory.

In an opinion by the Iowa Supreme Court this month it was held that the state law does not require a telephone company to connect its facilities with those of another. This decision reverses the Wayne County District Court which would have required the Northwestern Bell Telephone Co. to permit connection of its facilities with those of the Allerton Telephone Co.

The action was based on a mandamus suit brought by Attorney General Fletcher on relation of the Allerton Telephone Co.,

which sought to force the connection, which it claimed was extended to the Middle States Utilities Co. in Allerton.

"We find nothing within the statute which makes it obligatory upon one telephone company to physically connect its facilities with another," the supreme court decreed. This is said to have been the first case of its kind in Iowa, although parallel cases have been of record in other states.

New Utilities Tax Urged by New Jersey Governor.

Because nearly all of the public utilities in New Jersey "are now engaged in interstate business of some kind or another," Gov. Morgan F. Larson in his message to the legislature on January 12 declared that it may be necessary to abandon the gross receipts tax which has been in effect since 1900 and adopt another method of taxing the utilities.

The governor referred to the decision of the United States Supreme Court in 1930, holding that the tax cannot be applied to receipts from interstate telephone business. He stated that if this principle is applied to all other utilities, the municipalities will be deprived of a large amount of revenue.

After the organization of the New Jersey Bell Telephone Co. in 1927, it challenged the gross receipts tax, insofar as the interstate commerce over its line was included in the measure of gross receipts used for the ascertainment of the tax.

Approximately 25 per cent of its gross receipts is derived from interstate messages, which it handles in connection with companies in the adjoining states; the gross receipts tax upon which for the year 1928 amounted to more than $250,000 and for 1929 in excess of $300,000. The governor further called attention to the fact that this tax was distributed among the municipalities in proportion to the value of the line or facilities of the utility assessed within the municipalities, respectively.

Record of Dividends Introduced in Boston Rate Case.

At the continued hearing January 6, before the Massachusetts Department of Public Utilities on the petition of the Boston Central Labor Union for a reduction in the rates of the New England Telephone & Telegraph Co., Wycliffe C. Marshall, representing the petitioners, submitted the record of dividends declared by the company between June 30, 1906, and December 31, 1930.

Chairman Henry C. Attwill interrupted the hearing to state that the policy of Massachusetts has been for public utilities not to issue stock below par. The New England company, while not a Massachusetts corporation, has conducted its affairs on the Massachusetts theory.

If the dividend is reduced to 6 per cent, Mr. Attwill inquired, where will the stock go in the present market? Mr. Marshall did not make a direct answer, but said that transactions in New England Telephone stock on the Boston Stock Exchange constituted a small part of the total amount outstanding and that the stock could be manipulated. He said that a 6 per cent return is a reasonable one.

In reply to a question from Mr. Attwill regarding possible sale of a $2,000,000 stock issue today, Mr. Marshall said it could be sold at this time at par on a 6 per cent basis. Chairman Attwill said that he did not have all the confidence of Mr. Marshall.

Mr. Marshall submitted an exhibit covering the 24½ years, June 30, 1906, to December 31, 1930, which showed gross operating revenues of $856,717,558. Of this, the American Telephone & Telegraph Co. has received back as license payments, over $31,000,000.

Divisible income during this period was $158,511,527, of which the A. T. & T. Co. has received roughly one-fifth. During this period there has been paid in dividends out of net divisible income between one-fourth and one-fifth and amount added to surplus was almost $9,000,000.

Surplus at the start of the period (1906) was $1,909,000 and surplus at the end of the period (1930) was $9,125,000.

Mr. Marshall submitted a number of exhibits purporting to show the increased burden on the telephone user as the result of the change-over from the manual to the machine-switching system in Massachusetts.

C. S. Pierce, vice-president and general counsel of the New England company, attempted to have Mr. Marshall make a definite statement that what he was leading up to was that there should not have been a change-over from manual to machine-switching by the company. Mr. Marshall did not make a direct answer.

The hearing adjourned until January 27.

Commission Denies Reduction Based on Comparative Rates.

The Minnesota Railroad & Warehouse Commission, on December 31, denied an application for a general reduction in rates at the Rosemount, Minn., exchange of the Central West Public Service Co. The commission ordered, however, a reduction in rural multi-party rates of $2.25 to $1.75 gross or $2.00 to $1.50 net, effective January 1, as proposed by the company.

The applicants based their request for a reduction in the Rosemount telephone exchange rates primarily upon the grounds that an increase in the Farmington telephone exchange rates was recently denied by the commission; that the rural telephone rates at the Prior Lake exchange were recently reduced; and that the present schedule of rates and charges at the Rosemount exchange is generally higher than at the Farmington and Prior Lake exchanges.

The only evidence submitted by the petitioners, in support of their application for a reduction in rates, consisted of exhibits prepared from the sworn reports of the telephone company, filed with the commission, and data furnished in a previous case dated May 1, 1930, which authorized the present schedule of rates and charges at the Rosemount exchange; also an exhibit compiled by the attorneys for the petitioners showing the estimated annual earnings and expenses under the present and petitioned-for rates.

The evidence presented by the Central West Public Service Co. was to show that the company could not reduce the rates to the extent petitioned for without incurring an irreparable loss; also that its Rosemount telephone plant had not appreciably depreciated since the commission's order of May 1, 1930.

"After a careful consideration of all the matters disclosed at the hearing," the commission states, "we are of the opinion that the petitioners' contention, in this case—that the rates at Rosemount should be reduced for the reason that they are higher than the telephones rates at the Farmington and Prior Lake telephone exchanges—does not constitute a valid basis for ordering a reduction of the Rosemount telephone exchange rates, because the conditions under which the Farmington and Prior Lake telephone plants are constructed and operated may very well be substantially different from those controlling the Rosemount situation.

"Furthermore, we are unable to find anything in the record, in this proceeding, that would justify us in modifying our order dated May 1, 1930.

However, subsequent to the hearing in this proceeding, the Central West Public Service Co. advised the commission that, owing to the present general depressed business situation, it is willing to reduce the rural rates in the Rosemount exchange area from $2.25 to $1.75 per month, or from $2.00 net to $1.50 per month, if the commission so orders.

The commission believes, under all the circumstances and condition as found and stated herein, that the said reduction in the rural rates in the Rosemount telephone exchange area will reasonably satisfy the request of the petitioners in this proceeding."

The commission ordered the reduction in the rural rate as suggested by the Central West Public Service Co., effective January 1.

San Antonio, Tex., Rate Case Rehearing Resumed.

The rehearing in the federal court, of the suit of the Southwestern Bell Telephone Co. against the city of San Antonio, Tex., in the four-year-old rate increase controversy, was resumed on January 11. Detailed figures purporting to show that the telephone company's valuation on its prop-

(*Please turn to page* 40.)

Common Battery For Minnesota Town

Central West Public Service Co. Provides Modern Service for Telephone Subscribers in Canby, Minn.—Reconstructed System Now Includes a New Kellogg Masterbuilt Switchboard—Description of New Exchange Equipment Installed

By Jay Houghtaling,

District Manager, Kellogg Switchboard & Supply Co.

Because the people of Canby, Minn., wanted modern telephone service; because the Central West Public Service Co., which serves this territory, believes in giving its subscribers fine service only, Canby today boasts of complete and modern com-

Modern Substantial Telephone Building at Canby, Minn., Housing New Equipment

mon battery system the equal of any town of its size in the northwest.

It was at the turn of the present century that Canby first had the advantages of telephone communication. The Southwestern Minnesota Telephone Co. established the original system and conducted its affairs with varying success until 1905. At that time the local business men organized a company for the purpose of taking over the entire telephone system.

Their object in acquiring the company was to enlarge its facilities and improve telephone service to assure a more adequate communication system. They were planning for the present with a thought to Canby's future growth and prosperity. Under the supervision of Arthur W. Ewing, the company was quickly established as one of the city's soundest and most successful business enterprises.

Only one interruption marred its progress. That was in 1908 when a competing company was organized by the farmers in and about Canby because they thought, as an independent company, they could cut their rates. For a period of two years, the public had to contend with all the inconsistencies, trouble, and expense of two telephone systems. Eventually, the farmers' company encountered difficulties because of the low rates that it made and because the officials were inexperienced in telephone company management.

In 1910, Mr. Ewing's company bought the farm lines and completely rebuilt the system, including the installation of a new Kellogg magneto switchboard. In 1927, the property was purchased by the Central West Public Service Co., of Omaha, Neb. In response to the wishes of Canby subscribers for modern, common battery service, the new corporation started to rebuild both local and rural plants in preparation for the new service which was cut into service last year.

A two-position, 6-800 Masterbuilt switchboard was ordered from the Kellogg Switchboard & Supply Co., Chicago. The board is equipped with 340 common battery lines and 40 magneto lines for toll and rural service. Among other features, it has 34 universal cord circuits with automatic ringing, revertive ringing tone, and dark keyshelf.

The company officials chose the Masterbuilt switchboard because it possesses features for economical, fast, and reliable service. It has great earning power, low costs to maintain, is flexible and readily adaptable to changes caused by growth.

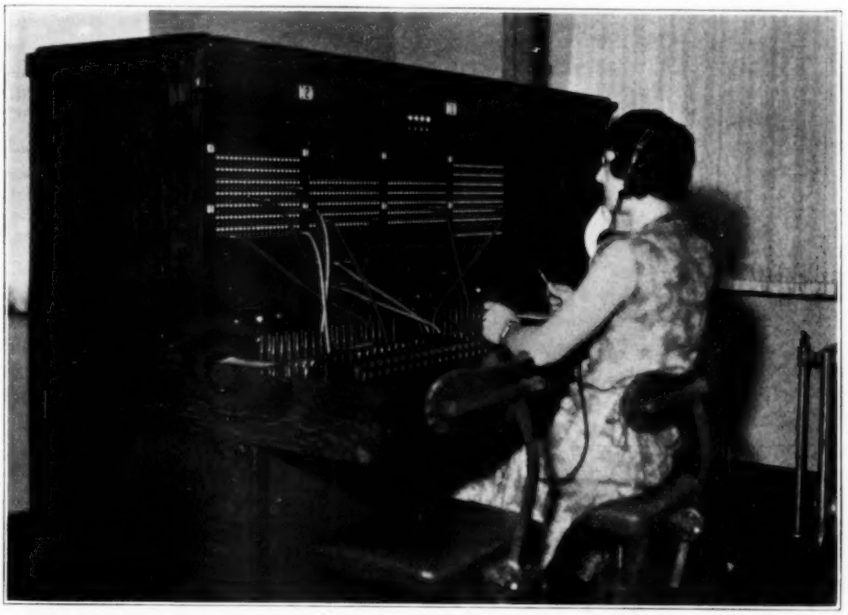
Changes can be made quickly, economically, and without service interruption. Toll and local traffic are both handled on an efficient, satisfactory basis. An individual position can be readily added if necessary, so that Canby is assured of adequate facilities for many, many years to come.

The positional equipment of a 6-800 Masterbuilt board is extremely simple and flexible. The keyshelf, connecting rack and relay gate are fully equipped and wired into a complete positional unit at the factory. It may be arranged for toll, local, rural, or mixed traffic. Each unit is easily interchangeable with any other positional unit.

Alternately colored supervisory lamps with cords of corresponding colors, assure a prompt and accurate disconnection. A two-party ringing and listening key with each cord circuit simplifies operation. Lamp signals are associated with local lines, and drop signals with toll and rural lines. All key shelves and equipment blanks are faced with durable, black phenol fibre.

A Cook main distributing frame was also installed. The power plant consists of a sealed type Exide battery with Tungar rectifier operated by an automatic charging control. An automatic switching device starts the battery-operated interrupter in case of a power failure, but starts the power-driven interrupter again when current is restored to the power lines.

To provide a substantial housing for the new Masterbuilt board and other equipment, a new telephone building was erected. This modern fireproof building is complete with an operating room, a terminal and wire chief's room, restroom, manager's office, and a lobby furnished with two



Chief Operator Seated at Attractive New Two-Position Kellogg Switchboard Recently Installed at Canby, Minn.

booths. A full basement provides substantial storage and work-room space.

The cutover to the Masterbuilt equipment was recently made without trouble or delay, and shortly afterward open house was held for the public. Many subscribers and others visited the plant and had the "workings" of the new system explained to them in detail.

W. H. Schrupp is the area manager for the Canby district and is succeeding in doing an excellent job. Incidentally, Mr. Schrupp is one of the leaders in the sale of Central West Public Service Co. stock which shows that he not only believes in his company, but has the faculty of making the public believe in it, too.

Frank Milhollan, president and general manager of the Central West Public Service Co., and F. M. Parsons, plant superintendent, both with headquarters in Omaha, Neb., were also actively interested in the purchase and installation of the new masterbuilt equipment.

E. B. Samp, district manager for the company, had a great deal to do with planning and establishing the new system and carrying it to a successful completion. He, too, was present at the house warming to welcome patrons and to greet old friends.

North Electric Mfg. Co's Fine Condition

Company Free From Debt With Ample Working Capital—Bonds Retired Without Any Refunding—Financial Structure Rearranged With Only One Class of Stock—Company's Manufacturing and Sales Activities During the Past 12 Years

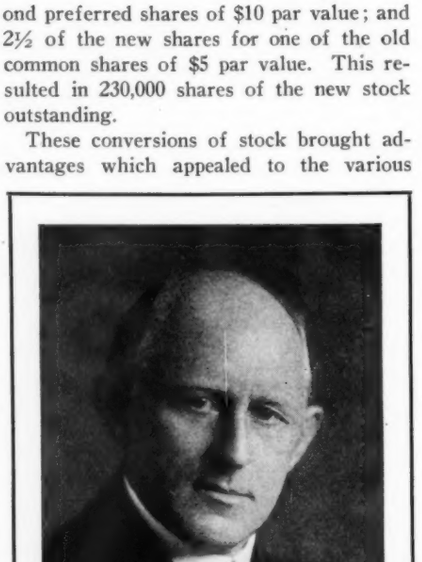
F. R. McBerty, president of The North Electric Mfg. Co., Galion, Ohio, reports that the changes in financial and capital arrangements of the North Electric Mfg. Co., upon which its officials and attorneys have been working through the last two years, have now been completed. These alterations have put the North company in a condition of stability and security. This has attracted attention because of its exceptional character in this period of financial loss and instability and of uncertain control.

The North Electric Mfg. Co. was organized in 1918 by Mr. McBerty and Kempster B. Miller, to take over the plant, patents, and business of the North Electric Co. and Telephone Improvement Co. Mr. McBerty's long connection with the Western Electric Co. up to the date of his participation in the organization of the North company and his numerous contributions to the development of the telephone art and particularly to the construction of automatic exchanges, and Mr. Miller's activities in the Independent telephone field with the Kellogg Switchboard & Supply Co. and his contributions to the literature of telephony, are well known to most of our readers among the Independent and Bell interests in America and those in foreign countries.

The capital and financial structure of the North Electric Mfg. Co. has comprised first preferred stock, of $100 par value, issued to the number of 8,546 shares; second preferred stock, of $10 par value, in the amount of 17,422 shares; common stock of par value $5, in the amount of 10,000 shares, and an issue of 7 per cent, 10-year bonds, dated November 30, 1921.

By an action of the stockholders taken this month arrangements were made for converting all the outstanding shares of stock of the various classes into a new no-par common stock, of which an issue of 300,000 shares was authorized. The conversions were in the ratio of 20 shares of the new no-par common stock for one first preferred share of $100 par value; two of the new common shares for one of the second preferred shares of $10 par value; and 2½ of the new shares for one of the old common shares of $5 par value. This resulted in 230,000 shares of the new stock outstanding.

These conversions of stock brought advantages which appealed to the various classes of stockholders, both as furthering the interests of the company and as being beneficial to them individually. The holders of first preferred stock who had contributed the funds which made the organization of the company possible, improved their control over the company's affairs and their participation in future profits.



F. R. McBerty, President of the North Electric Mfg. Co., Galion, Ohio, Who Is Largely Responsible for Placing the Company in Its Present Favorable Condition of Stability and Security.

The holders of second preferred shares, which carried no voting power and ranked after the first preferred shares in respect to both dividends and assets, acquired an equal right with other stockholders in the participation and control, but gave up a certain obstructive strategical position growing out of the relatively large number of such shares; holders of old common stock, the majority of whom were also holders of first preferred stock, had the satisfaction of seeing the company's capital position and control greatly simplified and improved.

These operations were carried out by Mr. McBerty, in conjunction with the company's attorneys, Messrs. Garfield, Cross, MacGregor, Daoust, and Baldwin, and transformed the company's capital status from one having a rather difficult relation to the new corporation statutes of Ohio, into one in complete and advantageous harmony with the new statutes, in the drafting of which Mr. Daoust had been an active participant.

The North company owns one of the three groups of patents which dominate the field of automatic telephony in the United States. Among them are said to be a number of patents of primary importance, including a patent covering fundamental features of the panel type exchange designed by the Western Electric Co. for the American Telephone & Telegraph Co., patents covering the generally used metallic circuit operation in dial automatic systems, patents on call distribution to operators in semi-automatic systems, and patents on the North company's "all-relay" system.

In 1921 the North company entered into an exchange of licenses with the two other holders of groups of patents in automatic telephony—Western Electric Co. and Automatic Electric Co.—which enabled it not only to add to its financial resources but to acquire complete freedom to manufacture its various types of automatic exchanges and allied apparatus. In connection with this operation and for the purpose of enabling it to expand and stabilize its business, it created and distributed the issue of bonds.

The issue of bonds matured on December 1, 1931. Interest was paid by the North company without default through the entire period, and the bonds were accorded a high status among investors.

About two years ago the company began buying in the bonds, and continued to do so up to the period of maturity, paying a substantial premium above par, and on these terms acquiring rather more than half of them prior to maturity.

In August of last year, having in view the uncertainties of financial circumstances, the company created with the Midland Bank of Cleveland, Ohio, a trust fund covering the balance of the bonds, the interest due, and the expenses for retirement and cancellation of bonds and mortgage.

On December 1, the conditions of the trust were fulfilled and the mortgage was cancelled. This operation was carried on out of the company's earnings and without resort to any refunding, leaving the company free from debt, other than short-term current items, and with ample working capital.

During the period of growth and consolidation of its interests, the North company and Mr. McBerty carried out a program of contributions to telephony and kindred industries which was of marked importance.

In 1919, they entered into arrangements with the General Electric Co., Ltd., of London (Peel-Connor Telephone Works) for the formation and financing of a company, known as "Coventry Automatic Telephones Ltd.," in England for manufacturing and distributing automatic telephone exchanges in England, other European countries, and the British colonies, excepting Canada. The Coventry company developed into an extensive supplier of automatic exchanges to the British and Colonial governments. Mr. McBerty served as consulting engineer for the British company.

Under this arrangement the North company supplied from its factory at Galion, Ohio, large dial automatic city exchanges for the cities of Dundee and Braughty Ferry in Great Britain, and for Delhi, Nagpur, and nearly a score of other cities in India. Fifteen of the city exchanges in India were dial automatic "all-relay" exchanges of the type now being widely put into service by the North company in the United States.

The largest of these dial automatic "all-relay" exchanges carries 600 lines and ties into a network of seven others operating over trunk lines up to 90 miles in length. These exchanges are operated by the government of India, and have been working successfully for about seven years.

The North company also closed a contract with the Westinghouse Electric & Mfg. Co. under which the North company manufactures its "all-relay" exchange equipments exclusively for the Westinghouse company for remote control of large power stations and systems, the Westinghouse company buying this equipment exclusively from the North company. The two companies cooperate in the development of circuits and apparatus for power-controlled systems. Under this arrangement the Westinghouse company has attained a premier position in this field. The Westinghouse company has put into operation about 200 of these "all-relay" equipments.

An arrangement was brought about by the North company with the Teleregister Co. of New York, a subordinate unit of the Western Union Telegraph Co., under which the North company makes the stock quotation equipments rented to stockbrokers for working with leased wires of the Western Union systems and maintained by the Western Union company. These Teleregister equipments also are of the North company's "all-relay" type.

At the same time the North company has installed a number of its well-known Auto-Manual systems, a large number of its "all-relay" remote-control, satellite equipments (without dials) and some 400 dial exchanges of the "all-relay" type, in towns and in private institutions.

These equipments are found in many of the largest universities, such as Harvard and Duke; in banks, such as the Cleveland Trust Co.; in insurance companies, such as Central Union Life of Cincinnati; in hospitals, such as the Ford hospital at Detroit; in industrial plants, such as those of the Carnegie Steel, The American Steel & Wire, Union Carbide, and the Standard Oil companies.

One of the latest dial-controlled "all-relay" equipments was sold a few months ago to the Associated Telephone Utilities Co. and is operating at Harbor Beach, Mich. Another late example of a dial-controlled "all-relay" exchange has been put into operation recently in Minnesota, for the Pioneer Telephone Co. It replaced a magneto switchboard in a grounded-line system having a considerable number of long, grounded party lines with many stations. It was installed with no rehabilitation of the plant beyond clearing up a few high resistance joints and bad line-grounds.

TELEPHONY expects to present in a future issue a description of this interesting system, which is on the lines of the equipment exhibited by the North company at the national Independent telephone convention in Chicago last October.

International T. & T. Corp. Gains 32,000 Telephones in 1931.

The International Telephone & Telegraph Corp. reports for last year a gain of about 32,000 in telephones in service.

The United River Plate Co. in Argentina made a net increase of 10,000 telephones; Spain, one of 29,000; Shanghai, one of 2,900; Brazil, 1,000, and Mexico City, 1,300. Cuba, on the other hand, lost about 12,000 telephones because of economic conditions there.

Gains and losses in the remaining countries served were about balanced.

AGE-PROOF BATTERIES MAKE MAINTENANCE COSTS COME down

GENERAL DRY BATTERIES
INCORPORATED
CLEVELAND, O.

Makers of all types of dependable Dry Batteries for Radio, Ignition, Flashlight and General Use.

WHAT THE COURTS AND COMMISSIONS ARE DOING.

(*Continued from page 36.*)

erty is from $1,000,000 to $2,000,000 too high were presented by the city.

The hearing continued through the week with further presentation, by the city, of exhibits as to valuation of equipment and real estate and the profits of the company. Just before adjournment until Monday, January 18, C. K. Quin, utilities attorney for the city, decided to have Richard H. Gregory, New York, comptroller of the Western Electric Co., reappear on the stand.

The hearing is being conducted by Judge Joseph B. Dibrell, special master in chancery. The city's side of the case was to have started about a month ago, but Clinton H. Montgomery, employed by the city to work up data, was in New York to review the books of the American Telephone & Telegraph Co., so the case could not be presented at that time.

On the opening day the city sought to prove through Cyrus G. Hill, member of J. G. Wray & Co., of Chicago, that instead of reducing prices on certain telephone equipment, in line with lower prices on other commodities generally, the Western Electric Co. had raised the prices of certain telephone apparatus as much as 25 per cent in the latter part of 1930.

Mr. Hill testified, over the objections of counsel for the telephone company, that the largest increases in prices were in connection with central office and P. B. X. equipment, despite reduced prices for raw materials which go into their construction, such as steel, rubber and copper.

He produced detailed figures giving the total estimated reproduction cost of the telephone company's property in San Antonio at the end of the year 1930 as $6,089,054, without deducting anything for depreciation, or $5,343,435 with depreciation oft. This he considered a fair valuation. This is in contrast to the valuation figure of $7,751,061 fixed on the property at the end of 1930 by the company's witnesses.

Carl Wright Johnson, special attorney for the city, questioned Mr. Hill and introduced the various exhibits. In addition to Mr. Johnson, the city is represented by Mr. Quin and Bruce Teagarden. The telephone company's counsel is headed by E. W. Clausen of St. Louis, the other attorneys being William H. Duls of Dallas, Tex., and E. D. Henry.

Mr. Hill explained that his figures on cost of reproducing the present San Antonio plant of the company included present alleged high prices of equipment quoted by the Western Electric Co.

Reproduction costs of the Southwestern Bell's San Antonio properties for four years, less depreciation, were given as follows: 1927, $4,572,000; 1928, $4,792,386; 1929, $5,238,698 and 1930, $5,343,435.

Most of January 12 and the morning of January 13 was taken up by cross-examination of Mr. Hill by Mr. Clausen. At the close of the cross-examination, Mr. Clausen moved to strike all of Mr. Hill's testimony from the record. He did not ask for a ruling on the motion at the time. He made the motion, he said, because Mr. Hill could not answer in the affirmative the last question asked him. The question was:

"Do you know the cost or the profits of any one of the items that the Western Electric Co. makes and sells to the Bell company?"

"I haven't any figures in mind," was the reply. "We have some preliminary figures together in New York, but nothing final and nothing I would be willing to testify to at this time."

Mr. Clausen arose and addressed Judge Dibrell: "Now in that case, if your honor please, without particularly asking for a ruling on the subject, I want the record to show a renewal of my motion to strike this witness' testimony, to which I objected on direct examination, in which he said these prices in his judgment were too high."

Technical discussions took up the afternoon of January 13 and the following morning. Exhibit No. 37, entered late on January 14 by J. G. Wray, revealed that local exchange revenues were $1,673,060.53 in 1927 and the expenses were $1,314,518.14 leaving $358,542.09 gross profits.

The city showed in its exhibits that central office equipment of the company in 1930, the last year for which valuation or operations are shown, was worth $840,060, exclusive of interest and taxes.

Mr. Wray's figures showed that $17,174 of the equipment was used exclusively for toll service; that $91,110 was for local service, and that $731,760 was used for both local and toll service.

Examination of Mr. Wray was interrupted on January 15 when the city put Tom Etheridge, Jr., on the stand to testify in regard to values of the company's real estate in San Antonio.

Mr. Etheridge testified that real estate values remained stationary from 1927 to 1929, but took a 25 per cent drop in 1930.

He valued the two Woodlawn exchange lots at $5,000; the Crockett-Travis exchange site at $2,000 a front foot, or about $50,000 less than the company value; the three lots of the Mission exchange at $10,000, and the warehouse site on Walnut street, fronting 400 feet on Southern Pacific tracks, at $30,000.

Bruce W. Teagarden, assistant counsel for the city, questioned Mr. Wray in regard to company earnings.

"Now, in your opinion, is the net income for 1929 and 1930 normal or abnormal?" Mr. Teagarden asked.

"I object to the question," said Mr. Clausen, "on the ground that there is no proper foundation for this witness to express an opinion on the abnormality of any income."

As had been the case in previous objections, the witness was allowed to answer the question, the objection being noted by Judge Dibrell. Mr. Wray said he thought net returns were abnormally low in 1929 and 1930.

When the hearing adjourned, the cross-examination of Mr. Wray was on the oft-recurring subject of theories of telephone operation, the board-to-board theory against the station-to-station theory.

Mr. Quin notified Mr. Clausen after the hearing had adjourned that R. H. Gregory, of the Western Electric Co., would be desired on the stand during the city's presentation of its case on inter-company relations, and the division of toll with exchange revenues to help bear the expense of the exchange. Mr. Gregory appeared in San Antonio last year for the Southwestern Bell company.

Runzel Cord & Wire Co., manufacturers of high quality Telephone and Switchboard CORDS and WIRE and CABLE.

W. L. Runzel, President, brings to this organization 41 years' experience in the manufacture of this type of telephone equipment.

Runzel Cord and Wire Co.

4727 Montrose Ave.
Chicago, Ill.

Summary of Commission Rulings and Schedule of Hearings.

ALABAMA.

January 14: Hearing in Scottsboro on application of Jackson County Telephone Co. to increase its rates in Scottsboro and vicinity.

Since the purchase of the Jackson County Telephone Co. by J. L. Kirk, of Moultrie, Ga., and J. E. Kirk, of Scottsboro, from A. L. Carpenter, former owner, a modern system has been installed at the cost of several thousand dollars. On the certified appraisal of the new system and on the improved service the raise in rates is asked by the present owners.

(*Continued on page 43.*)

Fig. 4 shows the existing scale used on an 0 to 25-volt meter. If it were desired to increase this range so that voltages up to, say, 40 volts could be measured, it would be desirable to make the new range 0 to 50 volts, as this would permit using a multiplier of 2 in converting readings to the new range.

If the new range were made 0 to 40, then the multiplier would be 1.6, and this would be more awkward to use.

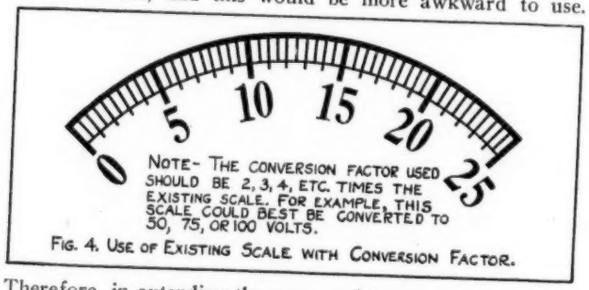

0
5
10
15
20
25
NOTE- THE CONVERSION FACTOR USED SHOULD BE 2, 3, 4, ETC. TIMES THE EXISTING SCALE. FOR EXAMPLE, THIS SCALE COULD BEST BE CONVERTED TO 50, 75, OR 100 VOLTS.

Fig. 4. Use of Existing Scale with Conversion Factor.

Therefore, in extending the ranges of instruments it is generally desirable to make the new range 2, 3, 4, etc., times the existing range for ease in converting scale readings to the new range.

Use of Shunt Across Moving Coil.

In making up voltmeters from milliammeters, or where extending the range of existing instruments, occasion often arises where it is desired to utilize an available series resistance rather than design the series resistor to fit the characteristics of the moving coil. This may be done—if the available resistor is lower in resistance than the required value—by placing a shunt across the moving coil as shown in Fig. 5.

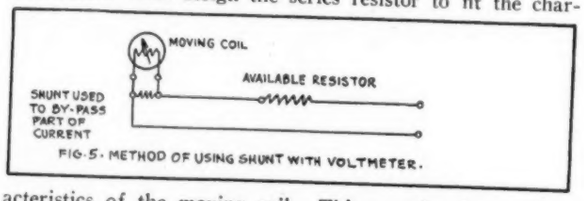


Fig. 5. Method of Using Shunt with Voltmeter.

The procedure of measuring the moving coil resistance and required current should be followed as outlined under Steps 1 and 2 and the required shunt then computed as follows:

$$I_1 = \frac{E}{R_1 + R_2}$$

$$\text{and } R_3 = \frac{I_1 R_1}{I_2}$$

where I_1 = current which will flow through moving coil with maximum voltage impressed; E = voltage range; R_1 = resistances of moving coil; R_2 = resistance of series resistor; and R_3 = shunt resistance (approximate value).

The computed value of the shunt will be slightly higher than required due to the fact that the total current flowing through the instrument will be greater than I_1 used in the foregoing equation as a result of the lowered resistance of the series circuit when the shunt is in place. The shunt value can either be recomputed using the series current flow which would result with it in the circuit. A more practical scheme would be to adjust it to the desired value using a second calibrating voltmeter.

The disadvantage of the plan of using a shunt lies in the fact that unless the available series resistance is quite high, the meter will draw too much current from the source being measured and hence be useless, except on low resistance circuits.

Practical Method of Finding Value of Series Resistance.

A simpler plan of changing the range of an existing voltmeter, or converting a milliammeter into a voltmeter is shown in Fig. 6.

It will be noted that this method consists in placing a resistor of the radio type in series with the moving coil and

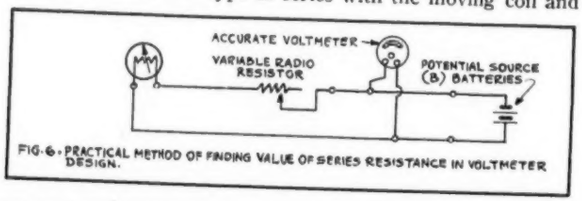


Fig. 6. Practical Method of Finding Value of Series Resistance in Voltmeter Design.

across a voltage source, the resistor is then adjusted until the moving coil deflects to the desired voltage as determined by a good voltmeter connected across the same potential source.

The value of the resistance cut into the variable resistor is then determined by an ohmmeter or Wheatstone bridge. A fixed resistance of the same value can then be substituted for the variable resistor and the instrument is ready to use. In connection with extending the range of existing voltmeters, it should be remembered that the new range may be doubled, tripled, or quadrupled by merely adding an external resistance of one, two, or three times the instrument resistance.

An Excellent Testing Unit.

An excellent testing unit can be made using a Weston model 301 0 to 1 range milliammeter, and a combination of shunt and series resistances. This unit will permit the single milliammeter to be used for making current, voltage, and resistance measurements. The ranges are so selected that a range is available for practically any measurement likely to

be made in connection with either telephone or radio work. Fig. 7 shows the schematic wiring and arrangement of this unit. It will be noted that all of the voltmeter ranges utilize the one milliampere coil in series with resistances of the proper value, thus giving voltmeter ranges having 1,000 ohms

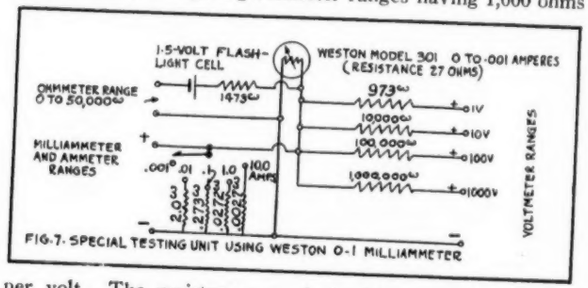


Fig. 7. Special Testing Unit Using Weston 0-1 Milliammeter

per volt. The resistances used should preferably be non-inductively wound and of zero temperature coefficient wire, although this is not necessary except when a high degree of accuracy is required.

It is necessary to make up a conversion table to convert voltage readings to ohms for use with the ohmmeter range. This is easily done using the equation:

$$R_1 = \frac{E-V}{V} R$$

where E = voltage of testing battery; V = voltmeter deflection; and R = voltmeter resistance.

Universal Type Meter.

A new type of meter which has recently been placed on the market by the Weston Electrical Instrument Corp., can be utilized in a circuit similar to that described in Fig. 7, but offers the additional advantage of both an alternating current and direct curent voltmeter with a single instrument.

The new meter is known as the Model 301 "Universal" type and consists of an 0 to 1 milliampere D'Arsonval type movement so arranged that this movement is brought directly out to two terminals for direct current measurements and to two other terminals through a bridge type copper oxide rectifier for alternating current measurements.

The meter dial has two scales, one calibrated for direct current and the other for alternating current measurements. Both scales require one milliampere for full-scale deflection and are calibrated to read 0 to 5. A common set of resistances can be used and an AC-DC voltmeter having a resistance of 1,000 ohms per volt obtained.

Due to the use of the copper oxide principle a frequency range of 0 to 30,000 cycles is obtained on the alternating current scale.

One set of resistors can be used for both scales and a simple switching mechanism to select the desired scale.

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MANUFACTURERS' LITERATURE

The following is a brief description of recently published bulletins, catalogs, etc. If you are interested in obtaining copies address your request to the manufacturer.

Notices Not Previously Published

CONVERSION KIT
Bulletin No. 203 describes how surplus idle wall telephones accumulating in the stockroom, can be converted to modern, attractive wall Masterphones. Complete simple instructions for this change are included in the bulletin, together with illustrations showing details of construction. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

OUTDOOR TELEPHONES
Bulletin No. 212 contains complete description and specifications of the new Kellogg outdoor telephone. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

Notices Previously Published

CLIMBERS
16-page booklet illustrating and describing climbers, straps, pads, tool belts and safety straps for linemen **W. H. Buckingham, 503 State Street, Binghamton, N. Y.**

NEW BUSINESS CAMPAIGN
32-page loose-leaf book, outlining a complete advertising campaign to help telephone companies sell new customers and keep old customers sold. For large and small exchanges newspaper advertisements, post cards, folders, and other direct mail pieces are shown. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

1-A POWER UNIT
New bulletin No. 176 giving complete description of the No. 1-A Power Unit. This unit with a set of storage batteries, forms a complete power installation, for P.B.X., magneto, or small common battery switchboards. It is an ideal arrangement for an office handling 3,000 calls or less a day. **Kellogg Switchboard & Supply Co., 1066 West Adams Street, Chicago, Ill.**

POLES
A 16-page illustrated booklet entitled, "Termites—A Growing Menace to Untreated Timber." **Ayer & Lord Tie Company, Railway Exchange Bldg., Chicago, Ill.**

POLES
"Handbook of Practical Information About Cedar Poles and Butt-treating," is the title of a 40-page, illustrated book now available. **Page & Hill Company, Minneapolis, Minn.**

SALES CAMPAIGNS
Two Small Folders specially designed for extension sales campaigns are now available. They will be furnished complimentary all ready for insertion with your monthly bills—they can be obtained in any quantity required. **American Electric Company, Incorporated, State & 64th Streets, Chicago, Illinois.**

TRANSMITTER BATTERY POWER UNIT
New bulletin TC-39 describing the new type CAB-4 combination storage battery and trickle charger power unit for magneto operator's transmitter battery, and its use. **Fansteel Products Company, Inc., North Chicago, Illinois.**

WOOD PRESERVATIVE
An eight-page booklet entitled, "ZMA for Wood Preserving," regarding the different uses of ZMA wood preservative **Curtin-Howe Corporation, 405 Lexington Ave., New York City, N. Y.**

When writing please mention TELEPHONY

Do all your men have one of TELEPHONY'S Engineering Handbooks?

ARE there sufficient copies of TELEPHONY reaching your company so that every man can acquire an individual handbook of Telephony's Engineering Data sheets? The contents of many single issues are of enough value to warrant the subscription price which, as you doubtless know, is $3.00—for fifty-two issues.

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(*Concluded from page* 40.)

CALIFORNIA.

January 11: Supplemental order issued amending terms of previous order to permit the Associated Telephone Co., Ltd., to issue and sell $500,000 in bonds previously authorized at not less than 90 per cent of their face value and accrued interest.

ILLINOIS.

December 10: Special permission granted the Southwestern Bell Telephone Co. to place in effect on one day's notice revised service connection, move and change charges applying to all its exchanges in Illinois.

December 10: Schedule filed by the La-Motte Cooperative Telephone Co., I. C. C. 2, applicable to Palestine and Heathville exchanges, completes filing of all rates at present in effect. No action was taken by the commission.

December 10: McHenry County Telephone Co.'s I. C. C. 1, rates, rules and regulations applicable to service at Marengo, filed and no action taken.

December 10: Farmers Mutual Telephone Co. I. C. C. 2, rates, rules and regulations relative to service at Ogden, effective January 1, filed and no action taken.

December 10: Alhambra Mutual Telephone Co. I. C. C. 4, sheet 2A, business extensions $9.00 and residence extensions $6.00 per annum, effective January 1.

December 10: Illinois Bell Telephone Co. I. C. C. 1, revised sheet 7, print showing initial rate area at Glenview exchange, filed for purpose of extending area, effective January 4. No action was taken by the commission.

December 10: Eastern Illinois Telephone Co. I. C. C. 1, sheet 2, applicable to Fisher, Rantoul, Gifford, Penfield, Thomasboro and vicinities; I. C. C. No. 1, service connection charges, applicable to all exchanges, effective January 1, filed and no action taken.

December 16: Order approved cancelling and annulling suspension and resuspension orders affecting rate schedule I. C. C. 2, of Illinois Commercial Telephone Co. filed February 9, 1931, as subsequently revised and modified applying to telephone service at Goreville and authorizing the revised schedule on file with the commission, effective January 1.

December 22: Order approved authorizing the Western Illinois Telephone Co. to issue and sell $21,600 aggregate principal amount of its first mortgage gold bonds dated April 1, 1928, maturing April 1, 1948, bearing interest of 6 per cent per annum, payable semi-annually, and to be issued under and secured by the first mortgage or deed of trust dated April 1, 1928, given by the company to the Northern Trust Co. as trustee.

December 23: Illinois Consolidated Telphone Co. I. C. C. 2, sheet 4, refile of a discount rule which was cancelled in error, applying to Butler, Edinburg, Hillsboro, Kincaid, Litchfield, Morrisonville, Nokomis, Owanceo, Pana, Raymond, Stonington and Taylorville, effective November 14, 1931. The commission took no action.

December 23: Mason City Telephone & Telegraph Co. I. C. C. 1, relative to service connection charges, effective January 10, filed and no action taken by the commission.

January 27: Hearing on citation of Middle States Telephone Co. to show cause why its rates in Park Ridge, Des Plaines and Pekin should not be reduced. Hearing continued to this date from January 13.

KANSAS.

January 20: Hearing in Smith Center on complaint of local subscribers against the United Telephone Co.

January 21: Hearing in Esbon on complaint of the subscribers against the Esbon Telephone Co.

January 22: Hearing in Kirwin, Phillips county, on complaint of the Kirwin Telephone Co. against the United Telephone Co.

MINNESOTA.

January 11: Order issued approving joint application of the Murdock-DeGraff Telephone Co. for permission to sell and the Murdock Central Telephone Exchange Co. for permission to purchase all the physical telephone property of the Murdock-DeGraff Telephone Co., situated in the township of Dublin, county of Swift.

MISSOURI.

January 12: In regard to complaint of the public service commission vs. G. E. Davis, owner and manager of the Stella Telephone Co., complaint ordered dismissed. The Stella Telephone Co. was authorized to file a schedule of toll charges for approval by the commission.

January 15: Approval granted application of E. O. Turner to sell and the Southeast Missouri Telephone Co. to buy certain telephone property located in Madison county.

January 26: Hearing on application of the Citizens Public Service Co. of Missouri for permission to abandon its grounded toll line between Troy and Moscow Mills.

February 1: Hearing in Trenton on application of the Middle States Utilities Co. for authority to abandon its Edinburg exchange.

February 1: Hearing in Trenton on application of the Middle States Utilities Co. to serve the telephone subscribers of its Nettleton exchange through Hamilton.

February 1: Hearing in Trenton on joint application of the Galt Telephone Co. and the Middle States Utilities Co. to abandon their joint telephone exchange at Modena.

February 1: Hearing in Trenton on joint application of the Galt Telephone Co. and the Middle States Utilities Co. to abandon their exchange at Mill Grove.

February 3: Hearing in Hannibal on application of the Middle States Utilities Co. for authority to render telephone service to its subscribers at St. Patrick through its exchanges at Kahoka and Wayland.

NEBRASKA.

January 15: In the matter of the application of the Glenwood Telephone Co. for authority to make net rates at its Blue Hill Exchange the gross rates, permission granted in view of the fact that the company exacts payments six months in advance and a surplus exists from which losses may be paid. This company is a combination of farmer-owned companies.

January 16: In the matter of the application of the Smithfield Mutual Telephone Co. for authority to publish and collect gross and net rates of $1.00 and 75 cents a month respectively; found reasonable and permission granted as asked.

January 16: In the matter of the application of Thomas P. Hamilton & Sons, of Thedford, for permission to abandon service to all subscribers and to disconnect from exchanges at Brownlee and Thedford; found reasonable and permission granted as asked.

OHIO.

January 27: Hearing on state-wide investigation of the Ohio Bell Telephone Co. postponed to this date from January 20.

OKLAHOMA.

January 27: Hearing on complaint of Clarence Tankersley vs. the Southwestern Bell Telephone Co. concerning rates for handset telephones at Shawnee.

January 27: Hearing on complaint of Clarence Tankersley vs. the Southwestern Bell Telephone Co. relative to charges for outside the initial rate area at Shawnee.

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Economy in Line Construction by Careful Pole Selection.

"The past two years has witnessed the greatest recession in values of equipment of all kinds that has been known in a lifetime, and prices are rapidly reaching rock bottom, with construction and replacement at the lowest point it has reached in years," says C. M. Jordan, president-treasurer of the Jordan Bros. Lumber Co.

"This means that construction materials of all kinds have been falling so rapidly that only such replacement as has been absolutely necessary has been undertaken within recent months. The spring of 1932 will unquestionably be an excellent opportunity for replacement and rebuilding of pole lines, due to the low price of both poles and labor."

Under present conditions, buyers are looking for the most economical, as well as the longest life pole obtainable, for replacements and extensions. Many telephone companies are using white cedar poles, because of their long life, lightness in construction, and the ease with which they may be climbed by the lineman, due to the outside of the pole seldom becoming shelly and consequently not safely holding the spurs of the lineman.

A white cedar pole, which is now standing at Norfolk Va., has been in use as a flag pole for over 23 years without resetting. This pole appears as sound today as when first set up. Although not supported by overhead wires or guys, it is said to be as straight and true as when the tree was growing in its original forest.

The Jordan Bros. Lumber Co. claims that these cedar poles are most economical, as Virginia white cedar contains an oil which makes it impervious to creosote, and accounts for its long life. Full information regarding costs of this class of poles will be forwarded to anyone by addressing Jordan Bros. Lumber Co., box 1384, Norfolk, Va.

American Electric Switchboard for Wellston, Ohio, Office.

The Standard Public Service Co. of Columbus, Ohio, has announced the purchase of an American Electric common battery switchboard for its exchange at Wellston, Ohio.

The new unit is to be a monotype community board and will have a capacity of 480 common battery lines, 40 rural and toll lines, and 30 universal cord circuits. It will be delivered equipped with 280 non-multiple common battery line circuits for local service, 20 drops and jacks for rural and toll service, and 30 universal cord circuits.

In addition to the switchboard, the American Electric Co. will also furnish a complete power plant of the noiseless floating charge type. This apparatus is to include batteries, meter panel, rectifier and ringing equipment—all of which is to be mounted on a steel battery rack. The complete central office equipment is scheduled for shipment on February 2, and it is expected that it will be installed shortly thereafter.

Another American Electric Co. switchboard was recently installed by the Standard Public Service Co. at its Sparta, Ill., exchange.

In addition to other utility interests, the Standard company operates, through subsidiaries, more than 150 exchanges in Ohio, Kentucky, Indiana, Illinois, Iowa, Missouri, Oklahoma, and Texas.

The officers of the company are R. E. Shott, president; J. E. Albert, vice-president and general manager; R. D. Huesel, treasurer; F. C. Dunbar, secretary; W. R. King, assistant secretary, and C. E. Druckemiller, purchasing agent.

Exide's Cleveland, Ohio, Branch Now in New, Modern Home.

The new home of the Cleveland branch of the Electric Storage Battery Co., manufacturer of Exide batteries, is now occupied at 6400 Herman avenue, N. W., Cleveland, Ohio.

For many years the sales and engineering staff of the branch occupied quarters at Chester avenue and East 24th street, while the assembly plant was located at 5121 Perkins avenue. Both these departments are now housed in the new building at 6400 Herman avenue, N. W., a distinctly newer industrial section of the west side. H. F. Sauer is manager.

The new plant is most efficiently arranged, modern in every respect. The plant has its own railroad siding with the receiving platform at car-door level and shipping platform at tail-gate height, facilitating the loading and unloading of trucks without lifting and lost motion.

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